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अंतरिक्ष विभाग
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GOVERNMENT OF INDIA:: DEPARTMENT OF SPACE
SATISH DHAWAN SPACE CENTER SHAR:: SRIHARIKOTA – 524 124
SRI POTI SREERAMULU.NELLORE DISTRICT (A.P)

TENDER NOTICE NO. SDSC SHAR/Sr.HPS/PT/RO/25/2021-2022

On behalf of President of India, Sr. Head Purchase and Stores, SDSC SHAR, SRIHARIKOTA invites on line quotations for the following.

SI No	Ref. No.	Description	Qty.
01.	SHAR LSSF 2021 000 750 New E-Procurement [Public Tender – Two Part]	Realization of Compressed Air System & Breathing Air System (CABA) and Eye wash & shower system for Orbital Module Preparation Facility (OMPF)	1 Lot
02.	SHAR LSSF 2021 000 603 New E-Procurement [Public Tender – Two Part]	Supply of Seamless Stainless Steel Pipes for Safety Systems	Lumpsum
03.	SHAR LSSF 2021 000 431 New E-Procurement [Public Tender – Two Part]	Realization of Fire Hydrant and Water Monitor System to Orbital Module Preparation Facility (OMPF)	1 Lot

Last Date for downloading of tender documents : 21.10.2021 at 16:00 hrs.
Due Date for submission of bids online : 21.10.2021 at 16:00 hrs.
Due Date for opening of tenders : 22.10.2021 at 14:30 hrs.

Instructions to Tenderers:

Bids shall be submitted on line through EGPS only and No tender fee shall be applicable.

01. For full details/scope of work and terms and conditions etc., please see the enclosed annexures.
02. Interested tenderers can download the e-tender from ISRO e-procurement website ISRO NEW E-PROCUREMENT (www.eproc.isro.gov.in) and submit the offer on line in the e-procurement portal. Offers sent physically by post/courier/in person will not be considered.
03. Tender documents are also available on ISRO website www.isro.gov.in ISRO New e-procurement website (www.eproc.isro.gov.in) and SDSC SHAR, Sriharikota website www.shar.gov.in. The same can be down loaded and offer submitted on line in the new e-procurement portal only.
04. Quotations received after the due date/time will not be considered.
05. The tender documents are available for download upto 21.10.2021 at 1600 hrs. and last date for submission of tenders on line 21.10.2021 at 1600 hrs. and Tender Opening on 22.10.2021 at 14:30 hrs.
06. Interested vendors can attend the Bid opening sessions to know the details. Presence not mandatory to consider the quote for evaluation.
07. Sr. Head, Purchase and Stores, SDSC-SHAR, Sriharikota reserves the right to accept or reject any/or all the quotations.

DT: 27.09.2021

भारतीय अंतरिक्ष अनुसंधान संगठन




Sr. HEAD PURCHASE AND STORES
Indian Space Research Organisation

REQUEST FOR PROPOSAL (RFP)
TO
REALISE COMPRESSED AIR, BREATHING AIR SYSTEM AND
EYE/FACEWASH SHOWER SYSTEM FOR
ORBITAL MODULE PREPARTION FACILITY (OMPF).

**Technical Specifications, Requirements, Terms & Conditions
for Procurement, supply, Fabrication, Erection, Testing &
Commissioning of Compressed air, Breathing air system and
Eye / Face wash shower system for
Orbital Module Preparation Facility (OMPF).**

SEP'2021



SATISH DHAWAN SPACE CENTRE
Indian Space Research Organization
Department of Space, Government of India
Sriharikota 524124
Nellore District, Andhra Pradesh State, India



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1. Introduction

Satish Dhawan Space Centre (SDSC-SHAR), Indian Space Research Organization (ISRO), Department of Space, Government of India, Andhra Pradesh 524124, Nellore District, Andhra Pradesh State, India (hereinafter referred to as "Department") intends to provide **Compressed air, Breathing Air and Eye/Face wash systems for orbital module preparation facility (OMPF)**.

Quotations are invited from the interested bidders for Supply, fabrication, erection, testing and commissioning of stainless-steel piping for Compressed air, Breathing Air and Eye/Face wash system for orbital module preparation facility (OMPF).

The proposed work includes pipe lines laying over pipe pedestals, pipe trenches at road crossings, erection of pipe lines for orbital module preparation facility (OMPF).

This work also includes supply of Equipment like SS air receiver, breathing air purifiers, SS pipes and fittings (304L/316L), flow components like SS ball valves, Filters, Eye and face wash showers, pressure regulators, pressure gauges etc. and interfacing with existing system Pipe lines.

The execution period from release of purchase order to final acceptance shall **be taken as 8 (Eight) months**. As this Project is of national interest and to be completed within the stipulated period, the Bidders are advised to take utmost care in studying the quantum & nature of work and plan adequate & suitable resources to execute the purchase order within the stipulated period while submitting the bids.

2.0 Details of the works to be carried out

Sl.No.	Description of the works to be carried out	Qty.
1	Realization of Compressed air system, breathing air system and Eye /Face wash & shower system for orbital module preparation facility (OMPF), which includes supply, fabrication, erection, testing, commissioning including painting as per the specifications given in Section-A to Section – D .	1Lot * (Refer table-1 for schedule of quantities for which unit prices shall be quoted in price bid only.)

Note: * **One Lot consists of the following schedules of the quantities given in Table -1.**

Schedule of the quantities

Table-1

Sl. No.	Description	Qty.	Units
1	Butt welding of SS Pipes and pipe fitting which includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, Root and subsequent passes with TIG welding (GTAW process). GTAW welding shall be with 99.99% purity argon gas shielding & purging, DP testing of root and subsequent passes and 10% radiography with weld consumables as per the specification in Section-B, Chapter-1	6000	Inch dia
2	Socket welding of SS Pipes and pipe fittings which includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, Root and subsequent passes with TIG welding (GTAW process). GTAW welding shall be with 99.99% purity argon gas shielding & purging, DP testing of root and subsequent passes with weld consumables as per the specification in Section-B, Chapter-1	600	Inch dia
3	Erection of SS piping which includes Installation of flow components like Ball valves, filters with required SS fasteners, SS spiral wound gaskets and mounting of Instruments like pressure gauges, etc., as per P&I diagram. Erection work also includes providing supports from pedestals and also from concrete wall by using anchor fasteners where ever required, wrapper coating of pipe line in road crossing, U-clamp fixing. Hydro testing, Pickling & passivation, painting of pipe lines and tag numbers. Pneumatic/Hydro testing and commissioning as per the specification in Section-B: Chapter-1 & Annexure-1, Annexure – 4 and Section-C: Chapter-10, Chapter-11.	6500	Inch meter
4	Supply, Fabrication & erection of structural supports including painting as per the specification in Section-B, chapter-1 & Annexure -2 and Section-C/Chapter-9.	3000	kgs
5	Providing required pipe pedestals for Compressed air pipe line routing and foundations and grouting of equipment as per the specification in Section-B, Chapter-1 & Annexure-3	5	Cu.m
6	Design, Fabrication, Supply and erection of Stainless-Steel Air receiver as per ASME Section-VIII Division-1 (latest Edition) of Capacity 5m3 as per specifications in Section-C/Chapter-1 & Annexure -1, Annexure -2	1	Nos.
7	Supply and erection of Breathing air purifiers; Breathing air shall meet OSHA/BS4275/EN12021 standard; Flow rate: 52 cfm at 7bar. As per the specification in Section-C/Chapter-2.	2	Nos.
8	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size: 15NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	40	Nos.
9	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 15NB	5	Sets

Sl. No.	Description	Qty.	Units
10	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:20NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	40	Nos.
11	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 20NB	5	Sets
12	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:25NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	8	Nos.
13	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 25NB	2	Sets
14	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:40 NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	8	Nos.
15	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 40NB	2	Sets
16	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:50 NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	4	Nos.
17	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 50NB	2	Sets
18	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 15NB (1/2") NPT(F) as per the specifications in Section-C/Chapter-4	10	Nos.
19	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 20 NB (3/4") NPT(F) as per the specifications in Section-C/Chapter-4	25	Nos.
20	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 25 NB (1") NPT(F) as per the specifications in Section-C/Chapter-4	5	Nos.
21	Supply of Air filters, Size:15 NB (1/2") NPT (F) as per the specifications in Section-C/Chapter-5	40	Nos.
22	Supply of Air filters, Size:20 NB (3/4") NPT (F) as per the specifications in Section-C/Chapter-5	5	Nos.

Sl. No.	Description	Qty.	Units
23	Supply of Air filters, Size:25 NB (1") NPT (F) as per the specifications in Section-C/Chapter-5	2	Nos.
24	Supply of Air filters, Size:40 NB (11/2") NPT(F) as per the specifications in Section-C/Chapter-5	10	Nos.
25	Supply of Gauge shut off valves, inlet end connection:1/2"NPT male, outlet end connection: 1/2" NPT female. As per the specifications in Section-C/Chapter-6,	30	Nos.
26	Supply of Gauge shut off valves, inlet end connection:1/2"NPT female, outlet end connection: 1/2" NPT female. As per the specifications in Section-C/Chapter-6,	30	Nos.
27	Supply of Double Shut off Quick release coupling with coupler (Part-A) and adapter (Part-B) Material :SS304, Seal: Viton , operating pressure :16bar, Medium: Air as per the following details and specifications given in Section-C/Chapter-7		
27.1	Coupler (Part-A) Size:1/2", One end to suit adaptor and other end 1/2"NPT(F) with dust plugs.	30	Nos.
27.2	Adapter (Part-B) Size:1/2", One end to suit coupler and other end 1/2"NPT(F) with dust plugs.	20	Nos.
28	Straight through type quick release coupling, Coupler (Part-A) and adaptor (Part-B) both without Non return valves as per the following details and specifications given in Section-C/Chapter-7		
28.1	Coupler (Part-A) Size:3/4", One end to suit adaptor and other end 3/4"NPT(F) with dust plugs.	40	Nos.
28.2	Adapter (Part-B) Size:3/4", One end to suit coupler and other end 3/4"NPT(F) with dust plugs.	20	Nos.
29	Supply of Eye/face wash fountain & pull-rod operated drench shower as per IS 10592 in SS 304 with SS twin cushion flow atomizers as per the specifications in Section-C/Chapter-8	8	Nos.
30	Supply of Industrial water filter for Eye wash/emergency shower as per the specifications in Section-C/Chapter-12	1	set

Note:

- **From Sl.No.01 to 29**, The Quantity mentioned is indicative only. The party shall give undertaking to hold the same quoted unit prices for +/- 10% variation of order quantities for each and every item based on site conditions.
- **From Sl.No.01 to 05**, the quantities may vary based upon site conditions. The payment will be made only for the quantities executed at site.
- The contract will be awarded to overall lowest only. Since procurement, supply and work contracts are interlinked, splitting of order is not possible.
- If necessary, the Bidders, may visit the SDSC SHAR for understanding the system requirements and assessing the site conditions before submitting the bid.

- The Bidders shall submit the bids in two parts viz,
 - i. Techno-commercial (Un-priced) bid and
 - ii. Price bid.
- The Department will initially open the techno-commercial bids and, if necessary, at their own discretion, organize post-bid techno-commercial meeting with the Bidders.
- The Department will initially evaluate the techno-commercial bids and shortlist the Suitable Bidders whose techno-commercial bids are compliant with the RFP specification and place them on equal footing. The Department will open the price bids of the technically Suitable Bidders only, hold post-bid price discussion, if necessary, at their own discretion, and award the Contract based on the technically suitable lowest-priced bid.
- The execution period from release of purchase order to final acceptance shall be considered **Eight months**. As this Project is of national interest and to be completed within the stipulated period, the Bidders are advised to take utmost care in studying the quantum & nature of work and plan adequate & suitable resources to execute the purchase order within the stipulated period while submitting the bids.

The details of the works carried out are given in the layout drawings and P&I diagrams.

Sl. No.	Drawing No.	Description
1	SS/OMPFI/CABA/OVERALL LAYOUT/01	Overall layout of OMPF Facilities
2.	SS/OMPFI/CABA/P&I/01	P & I Diagram of CA & BA System
3.	SS/OMPFI/CABA/AIR RECEIVER/01	SS Air Receiver
4.	DRG.NO. SS/OMPFI/CA, BA & EYE WASH SHOWER SYSTEM LAY OUT/01	Details of CA, BA POINTS & Eye wash shower units at OMPF.

This specification document is organized in three sections as follows.

Section – A General Terms and Conditions

Section – B Technical Specification for works to be carried out at site.

Section – C Technical Specification for Supply of items

Section – D Formats to be filled by bidder

Date of Notification issued by ISRO	:	As per e procure notification.
Last Date of downloading tender Document by tenderer	:	As per e-procure notification
Last date of submission of tender documents in online by tenderer	:	As per e-procure notification
Last date of Bid sealing in online by ISRO	:	As per notification
Last date for giving open authorization in online by tenderer	:	As per notification

3. Geographical Location and Climatic Conditions:

Sl.No.	Description	Details
a)	Owner / Purchaser	ISRO, SDSC, SHAR
b)	Focal Point	Associate Project Director, Gaganyaan project/orbital Module Preparation Facility (OMPF).
c)	Project Title	Establishment of Compressed air, Breathing Air and Eye/Face wash system for Orbital Module Preparation Facility (OMPF).
d)	Plant Location	Satish Dhawan Space Centre, SHAR, Sriharikota – 524 124 Nellore Dist. Andhra Pradesh
e)	Altitude	4.7123 meters above MSL
f)	Transportation	
	Nearest Railway Station	<ul style="list-style-type: none"> - The actual site is located about 13.0 km from main gate of Sriharikota. - Sriharikota is 18 km east of Sullurupeta in Nellore Dist. (Sullurupeta is on main rail line from Chennai to Vijayawada) - Sriharikota is 100 km North of Chennai
	Road	Sullurupeta is located on NH-5 from Chennai to Vijayawada.
	Air port	Nearest airport is Chennai/Tirupati
	Sea port	Nearest seaports are Chennai/ Krishnapatnam.
g)	Ambient air temperature	
	(a) Maximum dry bulb temperature	45.9 Deg. C
	(b) Minimum dry bulb temperature	11.8 Deg. C
	(c) Design wet bulb temperature for cooling tower design	28.3 Deg. C
h)	Relative humidity	
	a) Maximum	100 % (consider 95 % for design)
	b) Minimum	15 %
i)	Rainfall	
	Annual average rainfall in a year	1331.3 mm / year
	Maximum daily rainfall	240 mm in 24 hours
	Maximum hourly rainfall	26 mm / hr.
	Design intensity	140 mm / hr.
	Period of rainfall	July to December with peak rainfall in October and November.
j)	Wind data	
	Basic wind speed	230 KMPH
	Cyclone details	Place is prone to cyclones during October to December and facilities are to be designed for cyclonic loads
	Wind direction	Predominantly from South East (*)
k)	Seismic data	
	Zone	Zone III as per IS 1893 – 2002
	Coefficient	Basic horizontal seismic coefficient 0.16 as per IS:1893
l)	Latitude, Longitude	13° 47' N, 83° 15' E (*)
m)	Atmosphere	Saline and highly corrosive.

Section – A

General Terms and Conditions

1.0 Terms and Conditions for Bids

Offers shall be submitted in TWO-PARTS as per the details given below:

- Part-I - Techno-commercial Bid
 Part-II - Price Bid

2.0 Details to be furnished in Techno-commercial Bid & Price Bid as follows: -

Part-I – Techno-commercial Bid

The tenderer shall furnish point-wise confirmation for the technical specifications given in the enquiry. However, change of specifications/ deviations (if any) shall be brought out in the offer as deviation summary with detailed justification. Exclusions, if any from scope of supply shall be clearly indicated in the offer.

Tenderer need to furnish the details related to commercial terms indicating payment terms, details of bank guarantee in case of advance payments etc.

Tenderer shall quote the prices on “FOR-Sriharikota”.

The overall landed cost to SDSC SHAR will be taken as the basis towards finalization of the purchase order.

The Bidders shall indicate clearly the delivery/time period for supplying the items to SDSC SHAR.

2.1 Bidder need to submit unpriced price bid copy (as highlighted below) indicating the description of all the cost elements considered, without indicating the price/value. Tenderer shall note that indication of price in the techno-commercial bid shall lead to dis-qualification of bid.

2.2 FORMAT OF UN-PRICED PRICE BID:

The schedules of the quantities are as follows:

Sl. No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Percentage (%) of tax	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
1.	Realization of Compressed air system, breathing air system and Eye /Face wash & shower system for orbital module preparation facility (OMPF), which includes supply, fabrication, erection, testing, commissioning including painting as per the specifications given in Section-A to Section – D.	1	Lot	Unit cost value shall NOT be mentioned here to be given in price bid only	Applicable % of tax shall NOT be mentioned here to be given in price bid only	Applicable tax value shall NOT be mentioned here to be given in price bid only	Total cost value shall NOT be mentioned here to be given in price bid only	(Yes/No)

Note: * One Lot consists of the following as defined in **Table-2:**

Schedules of the quantities**Table-2**

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in _____	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes / No)
1	Butt welding of SS Pipes and pipe fitting which includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, Root and subsequent passes with TIG welding (GTAW process). GTAW welding shall be with 99.99% purity argon gas shielding & purging, DP testing of root and subsequent passes and 10% radiography with weld consumables as per the specification in Section-B, Chapter-1	600 0	Inch dia	Unpriced	Unpriced	Unpriced	(Yes / No)
2	Socket welding of SS Pipes and pipe fittings which includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, Root and subsequent passes with TIG welding (GTAW process). GTAW welding shall be with 99.99% purity argon gas shielding & purging, DP testing of root and subsequent passes with weld consumables as per the specification in Section-B, Chapter-1	600	Inch dia	Unpriced	Unpriced	Unpriced	(Yes / No)

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
3	Erection of SS piping which includes Installation of flow components like Ball valves, filters with required SS fasteners, SS spiral wound gaskets and mounting of Instruments like pressure gauges, etc., as per P&I diagram. Erection work also includes providing supports from pedestals and also from concrete wall by using anchor fasteners where ever required, wrapper coating of pipe line in road crossing, U-clamp fixing. Hydro testing, Pickling & passivation, painting of pipe lines and tag numbers. Pneumatic/Hydro testing and commissioning as per the specification in Section-B: Chapter-1 & Annexure-1, Annexure – 4 and Section-C: Chapter-10, Chapter-11.	650 0	Inch meter	Unpriced	Unpriced	Unpriced	(Yes/No)
4	Supply, Fabrication & erection of structural supports including painting as per the specification in Section-B, chapter-1 & Annexure-2 and Section-C/Chapter-9.	300 0	kgs	Unpriced	Unpriced	Unpriced	(Yes/No)
5	Providing required pipe pedestals for Compressed air pipe line routing and foundations and grouting of equipment as per the specification in Section-B, chapter-1 & Annexure-3	5	Cu.m	Unpriced	Unpriced	Unpriced	(Yes/No)
6	Design, Fabrication, Supply and erection of Stainless-Steel Air receiver as per ASME Section-VIII Division-1 (latest Edition) of Capacity 5m3 as per specifications in Section-C/Chapter-1 & Annexure -1, Annexure -2	1	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
7	Supply and erection of Breathing air purifiers; Breathing air shall meet OSHA/BS4275/EN12021 standard; Flow rate: 52 cfm at 7bar. As per the specification in Section-C/Chapter-2.	2	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
8	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size: 15NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	40	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
9	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 15NB	5	Sets	Unpriced	Unpriced	Unpriced	(Yes/No)
10	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:20NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	40	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
11	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 20NB	5	Sets	Unpriced	Unpriced	Unpriced	(Yes/No)
12	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:25NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	8	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
13	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 25NB	2	Sets	Unpriced	Unpriced	Unpriced	(Yes/No)

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
14	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:40 NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	8	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
15	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 40NB	2	Sets	Unpriced	Unpriced	Unpriced	(Yes/No)
16	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:50 NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	4	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
17	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 50NB	2	Sets	Unpriced	Unpriced	Unpriced	(Yes/No)
18	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 15NB (1/2") NPT(F) as per the specifications in Section-C/Chapter-4	10	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
19	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 20 NB (3/4") NPT(F) as per the specifications in Section-C/Chapter-4	25	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
20	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 25 NB (1") NPT(F) as per the specifications in Section-C/Chapter-4	5	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
21	Supply of Air filters, Size:15 NB (1/2") NPT (F) as per the specifications in Section-C/Chapter-5	40	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
22	Supply of Air filters, Size:20 NB (3/4") NPT (F) as per the specifications in Section-C/Chapter-5	5	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
23	Supply of Air filters, Size:25 NB (1") NPT (F) as per the specifications in Section-C/Chapter-5	2	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
24	Supply of Air filters, Size:40 NB (11/2") NPT(F) as per the specifications in Section-C/Chapter-5	10	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
25	Supply of Gauge shut off valves, inlet end connection:1/2"NPT male, outlet end connection: 1/2" NPT female. As per the specifications in Section-C/Chapter-6,	30	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
26	Supply of Gauge shut off valves, inlet end connection:1/2"NPT female, outlet end connection: 1/2"NPT female. As per the specifications in Section-C/Chapter-6,	30	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
27	Supply of Double Shut off Quick release coupling with coupler (Part-A) and adapter (Part-B) Material :SS304, Seal: Viton , operating pressure :16bar, Medium: Air as per the following details and specifications given in Section-C/Chapter-7						
27.1	Coupler (Part-A) Size:1/2", One end to suit adaptor and other end 1/2"NPT(F) with dust plugs.	30	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)
27.2	Adapter (Part-B) Size:1/2", One end to suit coupler and other end 1/2"NPT(F) with dust plugs.	20	Nos.	Unpriced	Unpriced	Unpriced	(Yes/No)

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
28	Straight through type quick release coupling, Coupler (Part-A) and adaptor (Part-B) both without Non return valves as per the following details and specifications given in Section-C/Chapter-7						
28.1	Coupler (Part-A) Size:3/4", One end to suit adaptor and other end 3/4"NPT(F) with dust plugs.	40	Nos.	Unpriced			
28.2	Adapter (Part-B) Size:3/4", One end to suit coupler and other end 3/4"NPT(F) with dust plugs.	20	Nos.	Unpriced			
29	Supply of Eye/face wash fountain & pull-rod operated drench shower as per IS 10592 in SS 304 with SS twin cushion flow atomizers as per the specifications in Section-C/Chapter-8	8	Nos.	Unpriced			
30	Supply of Industrial water filter for Eye wash/emergency shower as per the specifications in Section-C/Chapter-12	1	Set.	Unpriced			

Note:

- **From Sl.No.01 to 29,** The Quantity mentioned is indicative only. The party shall give undertaking to hold the same quoted unit prices for +/- 10% variation of order quantities for each and every item based on detail engineering/ site conditions.
- **From Sl.No.01 to 05** the quantities may vary based upon site conditions. The payment will be made only for the quantities executed at site.
- The contract will be awarded to overall lowest only. Since procurement, supply and work contracts are interlinked, splitting of order is not possible.
- If necessary, the Bidders, may visit the SDSC SHAR for understanding the system requirements and assessing the site conditions before submitting the bid.

2.3 Format to be filled signed and shall be uploaded by the supplier in technico-commercial bid:

Sl.No.	Description	Yes / No
1	The scope of work is fully understood by the supplier	
2	Confirm all the specifications and terms & conditions are acceptable	
3	Confirm the specification of items to be supplied can be met by the supplier	
4	Confirm the supply portions of items are fully quoted as per Section-C, exclusions if any shall be mentioned clearly.	
5	The individual item wise cost is to be quoted as per the Price bid format	
6	The details like taxes are clearly indicated for each line item.	
7	The mobilization charges for men / machineries / materials are considered and they are included in the basic cost.	
8	Modality of execution of contract, terms, rules & regulations, general conditions of execution of contract are read and all points are acceptable.	
9	Bidder Qualification Criteria and Evaluation criteria formats duly filled and signed.	
10	It is noted that the contract will be awarded to overall lowest only. Since procurement, supply and work contracts are interlinked; splitting of order is not possible	

Signature of the bidder

2.4 Part-II: Price bid indicating the price.

- Price bid should be submitted by the tenderer as per the following format & price break-up.
- In view of Two Part Tender, the Offers submitted contrary to above instructions will be summarily rejected.

Serial No.	Description of the works to be carried out	Qty.	Units	Unit cost (including Transportation, Testing Charges) Rs.	Applicable Taxes in percentage (%)	Applicable Tax in Rs.	Total cost Rs.
1.	Realization of Compressed air system, breathing air system and Eye/Face wash & shower system for orbital module preparation facility (OMPF), which includes supply, fabrication, erection, testing, commissioning including painting as per the specifications given in Section-A to Section - D.	1	Lot	Unit cost value to be indicated	Applicable tax value in % to be indicated	Applicable tax value to be indicated	Total cost value to be indicated

Note:

1. **One Lot consists** of the following as defined in **Table-3** for which unit prices shall be quoted.

COST/VALUE SHALL BE MENTIONED HERE ONLY (PART-II).

2. The contract will be awarded to overall lowest only. Splitting of order for supply and fabrication will not be considered. Since procurement, supply, fabrication and erection works are inter linked, splitting of order is not possible.

The following price details shall be uploaded along with offer:

Schedule of quantities**Table-3**

Sl. No.	Description of the works to be carried out	Qty.	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in percentage (%)	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
1	Butt welding of SS Pipes and pipe fitting which includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, Root and subsequent passes with TIG welding (GTAW process). GTAW welding shall be with 99.99% purity argon gas shielding & purging, DP testing of root and subsequent passes and 10% radiography with weld consumables as per the specification in Section-B, Chapter-1	6000	Inch dia @	@	@	@	(Yes/No)
2	Socket welding of SS Pipes and pipe fittings which includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, Root and subsequent passes with TIG welding (GTAW process). GTAW welding shall be with 99.99% purity argon gas shielding & purging, DP testing of root and subsequent passes with weld consumables as per the specification in Section-B, Chapter-1	600	Inch dia @	@	@	@	(Yes/No)

Sl. No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in percentage (%)	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
3	Erection of SS piping which includes Installation of flow components like Ball valves, filters with required SS fasteners, SS spiral wound gaskets and mounting of Instruments like pressure gauges, etc., as per P&I diagram. Erection work also includes providing supports from pedestals and also from concrete wall by using anchor fasteners where ever required, wrapper coating of pipe line in road crossing, U-clamp fixing. Hydro testing, Pickling & passivation, painting of pipe lines and tag numbers. Pneumatic/Hydro testing and commissioning as per the specification in Section-B: Chapter-1 & Annexure-1, Annexure – 4 and Section-C: Chapter-10, Chapter-11.	6500	Inch meter	@	@	@	@	(Yes/No)
4	Supply, Fabrication & erection of structural supports including painting as per the specification in Section-B, chapter-1 & Annexure-2 and Section-C/Chapter-9.	3000	kgs	@	@	@	@	(Yes/No)
5	Providing required pipe pedestals for Compressed air pipe line routing and foundations and grouting of equipment as per the specification in Section-B, chapter-1 & Annexure-3	5	Cu.m	@	@	@	@	(Yes/No)
6	Design, Fabrication, Supply and erection of Stainless-Steel Air receiver as per ASME Section-VIII Division-1 (latest Edition) of Capacity 5m3 as per specifications in Section-C/Chapter-1 & Annexure -1, Annexure -2	1	Nos.	@	@	@	@	(Yes/No)
7	Supply and erection of Breathing air purifiers; Breathing air shall meet OSHA/BS4275/EN12021 standard; Flow rate: 52 cfm at 7bar. As per the specification in Section-C/Chapter-2.	2	Nos.	@	@	@	@	(Yes/No)

Sl. No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in percentage (%)	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
8	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size: 15NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	40	Nos.	@	@	@	@	(Yes/No)
9	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 15NB	5	Sets	@	@	@	@	(Yes/No)
10	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:20NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	40	Nos.	@	@	@	@	(Yes/No)
11	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 20NB	5	Sets	@	@	@	@	(Yes/No)
12	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:25NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	8	Nos.	@	@	@	@	(Yes/No)
13	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 25NB	2	Sets	@	@	@	@	(Yes/No)
14	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:40 NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	8	Nos.	@	@	@	@	(Yes/No)

Sl. No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in percentage (%)	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
15	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 40NB	2	Sets	@	@	@	@	(Yes/No)
16	Supply of Full-Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:50 NB with PTFE/Teflon/Graphoil stem seals as per the specifications in Section-C/Chapter-3	4	Nos.	@	@	@	@	(Yes/No)
17	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 50NB	2	Sets	@	@	@	@	(Yes/No)
18	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 15NB (1/2") NPT(F) as per the specifications in Section-C/Chapter-4	10	Nos.	@	@	@	@	(Yes/No)
19	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 20 NB (3/4") NPT(F) as per the specifications in Section-C/Chapter-4	25	Nos.	@	@	@	@	(Yes/No)
20	Supply of Air Filter cum pressure regulator combination unit, with metal bowl, Max. Inlet pressure 17.5 bar, Size: 25 NB (1") NPT(F) as per the specifications in Section-C/Chapter-4	5	Nos.	@	@	@	@	(Yes/No)
21	Supply of Air filters, Size:15 NB (1/2") NPT (F) as per the specifications in Section-C/Chapter-5	40	Nos.	@	@	@	@	(Yes/No)
22	Supply of Air filters, Size:20 NB (3/4") NPT (F) as per the specifications in Section-C/Chapter-5	5	Nos.	@	@	@	@	(Yes/No)

Sl. No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in percentage (%)	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
23	Supply of Air filters, Size:25 NB (1") NPT (F) as per the specifications in Section-C/Chapter-5	2	Nos.	@	@	@	@	(Yes/No)
24	Supply of Air filters, Size:40 NB (11/2") NPT(F) as per the specifications in Section-C/Chapter-5	10	Nos.	@	@	@	@	(Yes/No)
25	Supply of Gauge shut off valves, inlet end connection:1/2"NPT male, outlet end connection: 1/2" NPT female. As per the specifications in Section-C/Chapter-6,	30	Nos.	@	@	@	@	(Yes/No)
26	Supply of Gauge shut off valves, inlet end connection:1/2"NPT female, outlet end connection: 1/2"NPT female. As per the specifications in Section-C/Chapter-6,	30	Nos.	@	@	@	@	(Yes/No)
27	Supply of Double Shut off Quick release coupling with coupler (Part-A) and adapter (Part-B) Material :SS304, Seal: Viton , operating pressure :16bar, Medium: Air as per the following details and specifications given in Section-C/Chapter-7							
27.1	Coupler (Part-A) Size:1/2", One end to suit adaptor and other end 1/2"NPT(F) with dust plugs.	30	Nos.	@	@	@	@	(Yes/ No)
27.2	Adapter (Part-B) Size:1/2", One end to suit coupler and other end 1/2"NPT(F) with dust plugs.	20	Nos.	@	@	@	@	(Yes/ No)
28	Straight through type quick release coupling, Coupler (Part-A) and adaptor (Part-B) both without Non return valves as per the following details and specifications given in Section-C/Chapter-7							
28.1	Coupler (Part-A) Size:3/4", One end to suit adaptor and other end 3/4"NPT(F) with dust plugs.	40	Nos.	@	@	@	@	(Yes/ No)
28.2	Adapter (Part-B) Size:3/4", One end to suit coupler and other end 3/4"NPT(F) with dust plugs.	20	Nos.	@	@	@	@	(Yes / No)

Sl. No.	Description of the works to be carried out	Qty.	Units	Unit cost (Including Transportation, Testing Charges) Rs.	Applicable Tax in percentage (%)	Applicable Tax in Rs.	Total cost Rs.	Separate Cost Mentioned in Price bid Form (Yes/No)
29	Supply of Eye/face wash fountain & pull-rod operated drench shower as per IS 10592 in SS 304 with SS twin cushion flow atomizers as per the specifications in Section-C/Chapter-8	8	Nos.	@	@	@	@	(Yes/No)
30	Supply of Industrial water filter for Eye wash/emergency shower as per the specifications in Section-C/Chapter-12	1	Set					(Yes/No)

Note:

**'@' - COST/VALUE SHALL BE MENTIONED HERE ONLY
(PART-II).**

- **From Sl.No.01 to 29**, The Quantity mentioned is indicative only. The party shall give undertaking to hold the same quoted unit prices for +/- 10% variation of order quantities for each and every item based on detail engineering/ site conditions.
- **From Sl.No.01 to 05** the quantities may vary based upon site conditions. The payment will be made only for the quantities executed at site.
- The contract will be awarded to overall lowest only. Since procurement, supply and work contracts are interlinked, splitting of order is not possible.
- If necessary, the Bidders, may visit the SDSC SHAR for understanding the system requirements and assessing the site conditions before submitting the bid.

A. PROPOSAL DOCUMENT

- 1.1 Bidder shall sign & stamp each page of the tender document (RFP) as token of his acceptance and submit the same along with his offer.
- 1.2 Proposal documents shall remain the property of SDSC SHAR and shall not be used for any another purpose without the consent of SDSC SHAR.
- 1.3 The proposal shall be completely filled in all respects and shall be tendered together with requisite information. Any offer incomplete in any particulars is liable to be rejected.
- 1.4 The Proposals shall be submitted on-line before the time limit for bid submission specified in the Letter Inviting Bid.
- 1.5 Supplier shall submit the open authorization on-line with in the time limit specified in the Letter Inviting bid.
- 1.6 The Proposal will be opened on the date and on the time specified in the Letter Inviting Bid or as soon thereafter as convenient. Proposal not received in time will not be considered.
- 1.7 Bidders shall set their quotations in firm figures and without variations/additions in the terms of the Proposal documents.

1.8 AMBIGUITY:

- Should there be any ambiguity or doubt as to the meaning of any of the tender clause/condition or if any further information is required, the matter shall be immediately brought to the notice of Head, Purchase & Stores of SDSC SHAR in writing.

1.9 Submission of the following documents along with offer:

- Catalogue/Data sheets of components.

1.9 After placement of order the following documents are to be submitted for approval:

- Isometric Diagrams
- Fabrication drawings
- Detailed Technical specifications of all the items.
- Schedule of quantities
- PERT chart showing work schedule.
- Procedure for work execution.
- Quality Assurance Plan (QAP).
- Testing and Evaluation Plan.

1.10 After completion of work during commissioning:

- Test & Evaluation documents.
- Test certificates of all components of system.
- Supplier shall submit three hard copies & one soft copy of all the approved drawings incorporating any modification / changes made during the execution of CONTRACT. All these drawings shall be marked as 'As Built'.
- Supplier shall submit 3 hard & one soft copy of O&M manual. These manuals should indicate weekly, monthly and yearly maintenance schedule and other instructions necessary for safe maintenance of Safety systems for orbital module preparation facility (OMPF).
- Submission of the drawings and manuals shall be a precondition for releasing of any final payment due to Supplier.

B. Preparation Of Bids

1.1 Validity of Offer:

Bid shall remain valid for acceptance for a minimum period of *4 (four) months* from the due date of submission of the Bid. The Bidder shall not be entitled during the said period to revoke or revise his Bid or to vary the Bid except and to the extent required by SDSC SHAR in writing. Bid shall be revalidated for extended period as required by SDSC SHAR in writing. In such cases, unless otherwise specified, it is understood that validity is sought and provided without varying either the quoted price or any other terms & conditions of Bid finalized till that time.

1.2 Cost of Bidding:

All direct and indirect costs associated with the preparation, submission of bid shall be to Bidder's account, and SDSC SHAR will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bid process.

1.3 Applicable Language/ measurements:

The bid and all correspondence incidentals to and concerning the bid shall be in the English Language. For supporting document and printing literature submitted in any other language, an accurate English Translation shall also be submitted.

Responsibility for correctness in translation shall lie with the Bidder. All the measurements shall be given in metric system.

1.4 Arrangement of Bid:

The Bid shall be neatly presented on white paper with consecutively numbered pages. It should not contain any terms and conditions, which are not applicable to the Bid. The Bid and all details submitted by the bidder shall be signed and stamped on each page as token of acceptance, by a person legally authorized to enter into agreement on behalf of the Bidder. (Corrections/ alteration, if any, shall also be signed by the same person).

1.5 Schedule of Prices:

The schedule of prices shall be read in conjunction with all the sections of proposal document.

1.6 Documents Comprising the Bid:

Bids shall be arranged in the following order.

- Priced bid shall be filled online in the price bid format.
- Schedule of unit prices also to be filled as per price Bid format and no separate document shall be attached.
- Deviations in terms and conditions, assumptions etc. shall be stipulated in format specified in the portal.
- SDSC SHAR will not take cognizance of any such statement and may at their discretion reject such bids.

C. BID SUBMISSION

- Bids duly filled in by the Bidder should invariably be submitted as stipulated in the Letter inviting bid. Bids shall be submitted in the following manner.
Price Part of the Bid.
- Price bid shall be filled in the on-line ‘price bid’ form of the e-tender only in ISRO e-procurement website “<https://eprocure.isro.gov.in>”. The cost of items and other prices shall be filled in the respective forms available on-line in the e-portal. Any other terms and conditions not given in this part shall not be considered and if insisted upon by the Bidder, bids are liable for rejection.
- SDSC SHAR reserves the right to reject any or all the Bids without assigning any reasons thereof.

D. BID EVALUATION

1. During evaluation, SDSC SHAR may request bidder for any clarification on the bid or additional documents.
2. Techno-commercial discussion shall be arranged with bidder, if needed. Bidder shall depute his authorized representatives for attending discussions. The representatives attending the discussions shall produce authorization from his organization to attend the discussion and sign minutes of meeting on behalf of his organization if required. The authorized representative must be competent and empowered to settle/decide on all technical and commercial issues.
3. Bidder must provide the point-by-point compliance to the technical specifications along with deviations. The tender will be rejected, if the deviations are not acceptable to the department.
4. The time schedule for completion is given in the proposal document. Bidder is required to confirm the completion period unconditionally.
5. If necessary, to arrive at evaluated prices, wherever applicable, loading on total quoted prices shall be done.

6. SDSC SHAR reserves the right to accept a bid other than a lowest and to accept or reject any bid in full or part without assigning any reasons. Such decisions by SDSC SHAR shall bear no liability whatsoever consequent upon such decision.
7. The bidder, whose bid is accepted by SDSC SHAR, shall be issued a Letter Of Intent (LOI) /Purchase Order (PO) to proceed with the work. Bidder shall confirm acceptance by returning a signed copy of the LOI/PO.

E. Commercial Terms:

1) Taxes:

i.IGST

For Inter State:

As per the Notification No.47/2017-Integrated Tax (Rate) Dt: 14.11.2017 issued by Ministry of Finance (Dept. of Revenue), SDSC SHAR is eligible to avail reduced rate of IGST @5% for the procurements made by the Dept. of Space (DOS) being a public Funded Research Institution. We will provide IGST exemption certificate.

For Intra State:

As per Notification No.45/2017- Central Tax (Rate) dated 14.11.2017 and Government of Andhra Pradesh Goods and Service Tax Act, 2017 (Act No.16 of 2017), G.O.MS.No.599, Dated: 12.12.2017 issued by Ministry of Finance (Dept. of Revenue), SDSC SHAR is eligible to avail a reduced rate of CGST/SGST @ 5% for the procurements made by the Dept. of Space (DOS) being a public funded research Institution. We will provide IGST exemption certificate.

iii. Income Tax

Income tax at the prevailing rate as applicable and if applicable from time to time shall be deducted from the supplier's bills as per Income Tax Act and a certificate issued (TDS Certificate).

iv. Customs Duty

As per notification No.05/2018 Customs dated 25th January, 2018, ISRO is eligible only for partial exemption of Customs Duty. The reduced rate of CD is 10.775% (CD@5%+Surcharge@10%+IGST@5%). Suppliers are requested to submit their bid by loading these elements wherever, it is applicable. In case of an order, we will issue CD exemption certificate to avail the exemption. The actual amount will be reimbursed against submission of documentary evidence.

In case tenderers offering items considering customs duty exemption, they should also indicate the bill of materials and price, separately, with Customs Duty component and terms and conditions thereto.

v. Make in India:

General Terms & conditions for Bidders: For this procurement, bids from Class-I & class-II Local Suppliers are admissible. hence provisions contained in Public Procurement (Preference to Make in India), Order 2017 issued by Department for Promotion of Industry and Internal Trade (DIPP), Ministry of Commerce & Industries vide letter No. P-45021/2/2017-PP(BE-II) dated 04.06.2020 and subsequent amendment & directives shall be followed. Accordingly, offer will be evaluated & processed in conformation with above referred GOI order (Specially mentioned below). The bidder shall provide compliance and undertaking as per order and hereafter amendments:

(a) Order no: F.No.6/18/2019 PPD dated 23.07.2020 of Department of Expenditure), Ministry of Finance Under Public procurement division for the General Financial rule (GFRs).

(b) Class-I local supplier means a supplier or service provider, whose goods, service or works offered for procurement, has local content equal to or more than 50%, as defined under order.

(c) Class-II local supplier means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under this Order

(d) Verification of local content:

(i) The Class I local supplier/ Class- II local supplier at the time to tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for Class-I local supplier / Class II local supplier as the case may be. They shall also give details of the location(s) at which the local value addition is made.

(ii) In case bid value is in excess of Rs. 10 Cr., Class-I local supplier / Class-II local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

(iii) False declarations will be in breach of the code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules (GFR) for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the general Financial Rules along with such other actions as may be permissible under Law.

(iv) A supplier who has been debarred by any procuring entity for violation of this order shall not be eligible for preference under this order for procurement by any other procuring entity for the duration of the debarment.

(e) The percentage of local content should be specifically mentioned in the offer, without which it will be summarily rejected.

(f) Preference will be given to Class-I Local supplier and in their absence, Class-II Local supplier will be considered.

2) Delivery Period:

Eight months (8) from purchase order release date. (**Please refer S1.No.20 - General conditions, clause 'n'.**)

3) Terms of Payments

Our general payment terms are within 30 days after receipt and acceptance of items at purchaser's (SDSC-SHAR Sriharikota) Site.

However, in case of any request from supplier/party, the following payment terms may be considered.

a) After placement of confirmed Purchase order:

20% of order value as advance payment against submission of advance bank guarantee for an equal amount from a reputed nationalized/scheduled bank and shall be valid till contract completion period. Format of Bank guarantee shall be obtained from Department after award of contract.

b) After receipt at SDSC SHAR, Sriharikota:

70% payment will be made pro-rata basis for both supply and erection /fabrication work as applicable. However, the number of bills will be restricted. It will be mentioned at the time of PO placement.

c) After commissioning at SDSC SHAR, Sriharikota:

Balance 10% of order value against satisfactory performance of system against performance bank Guarantee.

d) Advance Payment

Wherever advance payment is requested, Bank Guarantee from any Nationalized Bank/Scheduled Bank should be furnished. In case of advance payments, if the vendor/supplier is not supplying the material within the delivery schedule, interest will be levied as per the Marginal Cost of Lending Rate (MCLR) of SBI plus 2% penal interest.

Interest will be loaded for advance payments/stage payments as per the MCLR of SBI and will be added to the landed cost for comparison purpose. In case of different milestone payments submitted by the parties, a standard and transparent methodology like NPV will be adopted for evaluating the offers.

4) Liquidated Damages (LD):

Since delivery is the essence of this order, LD @ 0.5% per week or part thereof subject to a maximum of 10% of the order value for the delayed period of supply/ scope of work.

5) Warranty:

Warranty for the offered item shall be from the date of installation/acceptance of the item at our site for a minimum period of one year.

6) Performance Bank Guarantee (PBG):

The contractor has to submit a PBG from a Nationalized / Scheduled Bank for 3% of the order value at the time of supply valid till the completion of warranty period plus 60 days towards claim period. OR 3% of the order value shall be held till the completion of warranty period.

7) Security Deposit (SD):

3% value of the order shall be deposited with SDSC within 10 days from the date of the Purchase Order towards security deposit in the form of Bank Guarantee towards performance of the Contract valid till completion of the contract period plus sixty days towards claim period. (This will be returned by SDSC immediately on execution of the order satisfactorily as per order terms. If not, the amount will be forfeited).

8) Validity of Offer:

The validity of the offers / tenders should be 120 days from the date of opening of the tenders. Tenders shorter than offer validity mentioned above will not be considered for evaluation.

9) As all the scope of work is inter-related, Bidder has to quote for all the items listed in the Technical specification (Section- B&C), Schedule of quantities without which the offer will not be considered.

10) Force majeure

For the purpose of the contract, the term “force majeure” shall mean strikes, lockouts and other conflicts, acts of an enemy, war hostile blockade, disturbance of the public order, stroke of lightning, fire under thunderstorm, flood explosion and acts of god and government acts beyond the reasonable control of the party claiming force majeure. If due to circumstances of force of majeure, either of the parties to this contract partially or completely unable to fulfil its obligations in accordance with this contract, the said party shall be obligated to immediately inform the other party of occurrence of the circumstances of force majeure in writing. The party claiming force majeure shall also be obligated to keep the other party informed of the events in the process related to the occurrence of the said force majeure circumstances and of the possible degree of non-fulfilment or delay in fulfilment of the obligations in accordance with this contract. All the obligations of the party that invokes the plea of force majeure shall be

suspended as long as the said force majeure circumstances continues to exist and not longer, and the said party shall not be regarded as having committed breach or failure, nor shall be held responsible to make compensation for losses suffered by either party. The terms of fulfilment of the obligation shall be duly extended for the period during which the circumstances of force majeure lasts. The fulfilment of the obligations shall be resumed immediately after the cessation of the said circumstances of force majeure. If the said force majeure circumstances last for more than sixty days, parties to this Contract shall discuss and agree upon further action. Should the state of non-fulfilment of obligation under the Contract be more than three (3) months and nothing could be done to make a statement about ceasing of obligations of Contract, within not more than three (3) months either party has the right to cancel the Contract mentioned below. The ownership of all materials, parts and unfinished work paid for by the SDSC SHAR shall vest with the SDSC SHAR or transferred to the SDSC SHAR as soon as they have paid for. The amount of compensation payable/recoverable shall be fixed on the basis of evidence produced by party and acceptable by the purchaser.

11) Arbitration

Except as otherwise specifically provided in the Contract any disputes or differences including those considered as by only one of the parties out of or in connection with this Contract shall be, to the extent possible, settled amicably between the parties. If amicable settlement cannot be reached, then all disputes shall be referred to Director, SDSC SHAR, ISRO, whose decision shall be binding on both the parties. If this contract is terminated for any reasons, the expenses incurred for conduct of the above work are to reckoned to the extent of the work that is carried out which will be settled by the either of the parties to this contract on mutual agreement within 30 days or such extended period from the date of intimation of termination of contract.

12) Secrecy:

The party shall take all reasonable steps necessary to ensure that all persons employed in connection with the Purchase Order have full knowledge of the Official Secrets Act and the regulations framed there under. Any breach of the aforesaid conditions shall entitle the purchaser to cancel the Purchase Order and if necessary to go ahead with the purchase at the risk and cost of the party in addition to any other penal action it may take at its discretion.

13) Compliance with security requirements:

The party shall strictly comply with the security rules & regulations of the purchaser. The party shall complete the required formalities including verification of character & antecedents, of the persons engaged or deployed by him, through police or any other authority.

14) Confidentiality and proprietary right protection:

The party shall be obliged to preserve the confidentiality of the proprietary information received, exchanged between each other during the period of the Contract. Technical documentation published and/or claimed for a patent shall be effected by both the parties only on mutual decisions and approval of both the parties, during the existence of this agreement.

15) Instructions to the Bidder

In case of any conflict/contradiction, the documents shall prevail over one another in the following order:

- I. For all commercial, contractual and general conditions, Notice Inviting Tender (NIT).
- II. Any contradiction either between various parts of document or in the content of the document itself shall be a matter of clarification to be obtained by the bidder from the purchaser. The purchaser's decision shall be final and binding.
- III. The Bidder shall study the specification, visit the site and satisfy himself thoroughly regarding the workability of the proposed Compressed air & Breathing air system and Eye wash shower system and shall take full responsibility for best quality of material and workmanship, guaranteed operation and smooth performance of all Compressed air & Breathing air system and Eye wash shower system/equipment & accessories and

- integrated system as a whole. This technical specification is only guidance to the bidder and hence all the items necessary for safe and satisfactory operation, guaranteed and reliable performance of proposed Compressed air & Breathing air system and Eye wash shower system shall be included in his offer though these might not have been specifically mentioned in the technical specification / schedule of quantities.
- IV. The Bidder shall satisfy the department that he possesses the necessary technical experience for design& execution and has at his disposal suitable facilities and crew to ensure that his work shall be of the best quality and workmanship. Necessary particulars in this regard shall be furnished with the offer.
- V. Successful Bidder shall obtain approval from department for selecting sub- suppliers and makes for any of the equipment/ parts.
- VI. An unpriced copy of the order on the sub-suppliers comprising all detailed specifications and the quantities of the material ordered, bill of material including necessary drawings thereof, shall be sent to department immediately after such order is placed by the successful Bidder.
- VII. The purchaser reserves the right of selecting the make/model of equipment, wherever necessary and the supplier shall agree to supply equipment of particular make/model without any cost implication to purchaser.
- VIII. Any loss of plant and equipment after receipt at site due to imprudence, negligence and unsuitable treatment and handling on part of the contractor shall have to be replaced by the contractor at his cost.
- IX. Any existing services or other property if damaged or demolished during the course of execution either willfully or negligently, shall be re-done/ re-erected by the bidder at his own cost.
- X. The bidder shall take all precaution against damages due to rains or other natural causes and no liability shall lie with the purchaser for any loss on this account.
- XI. The approval of drawings and/or inspection by Department and/ or their authorized representative shall not absolve or relieve the bidder from any of his obligation under this contract and they shall be wholly and solely responsible for the satisfactory operation and guaranteed performance of the systems and equipment forming part of the system.
- XII. This specification is issued for procurement from indigenous sources only. However, no foreign exchange or import license for importing equipment, components, raw materials or spares will be arranged for or provided by the purchaser. In case the equipment offered involves expenditure in foreign exchange, same shall be arranged and borne by the Bidder.
- XIII. Any equipment / material which in any way fails to meet the requirements of the specification will be rejected by the purchaser and such equipment / material shall not be used under the contract. The successful Bidder will be required to promptly furnish new material at his cost without hampering the overall schedule of commissioning of the project.
- XIV. Any changes or difficulties which might be encountered during the execution of work or any other problems due to local conditions which are not anticipated / included in the tender document shall fall under full obligations of the successful Bidder. No claim on account of the same and for any ambiguity in any respect will be entertained after placement of order by Purchaser.
- XV. The equipment covered in this specification shall conform to the technical specification, general requirements and relevant latest standards / codes in respect of dimensions, size, material, manufacture, inspection, testing, painting, packaging, etc. as applicable.
- XVI. All material, dimensional standards, tolerances, process of manufacture and testing procedures shall be in accordance with the latest revision of the standard codes specified in this Tendering Specification. In case where such suitable standards are not mentioned, any acceptable Indian/International Standards shall be adopted with prior approval of purchaser.
- XVII. All equipment supplied shall allow access to facilitate connecting up, inspection, maintenance and repair and shall operate satisfactorily under such variations of load, pressure and climatic conditions as may occur during working.
- XVIII. All documents, instructions, name plates etc. shall be written in English language. All weights, dimensions and units shall be in metric system.
- XIX. The Bidder shall be responsible for completeness of supplies, work and services to make the system complete and proper operation. Any equipment and material not specifically mentioned in this tendering specification, but required for safe, smooth and efficient operation and guaranteed performance of the Breathing air, Compressed air and Eye/Face wash shower system shall be deemed to be included under the scope of work of the Bidder. No claim shall be entertained on this account after placement of Order.

- XX. Purchaser reserves the right to reject all or any of the offer fully or partly without assigning any reasons, whatsoever.
- XXI. The Bidder shall quote for earliest delivery of the equipment / supplies as well as earliest completion of the entire work.
- XXII. The Bidder shall submit the Quality Assurance Plan containing the overall quality management and procedures which he proposes to follow for performing the work during various phases of execution.
- XXIII. At the time of award of contract, the detailed Quality Assurance Plan to be followed for execution of the contract will be mutually discussed and agreed to.
- XXIV. The sub-contracts for part works can be given for successful completion of project with consensus of purchaser. The total sub-contract of the project is not allowed.
- XXV. Materials used and equipment supplied shall be new and the best of their kind and shall comply with the latest revisions of all relevant standards. Manufacturer's certificates shall be furnished by the successful Bidder for the material used.
- XXVI. As a minimum requirement, the contractor shall identify a resident engineer / site supervisor to coordinate with department and ensure the quality job completion in specified time.
- XXVII. Compressed air & Breathing air system and Eye wash shower system shall be erected, tested and commissioned as per the standards laid down in this specification. Detailed instructions on such aspects as are not indicated herein shall be as per the latest Indian standards.
- XXVIII. Bidder shall clearly indicate the deviations taken from the Tender documents/specifications separately in his offer.

16) Terms & Conditions to Bidder

- Compliance statement to the technical specification given is to be duly signed & stamped and submitted as a part of acceptance.
- Detailed QAP shall be submitted by the party after placement of order. Quality Assurance Plan mutually agreed by successful bidder and purchaser shall be complied. Party shall confirm the broad guidelines mentioned in the technical specification document.
- Deviations, if any, w.r.t technical and commercial terms & conditions shall be clearly brought out and deviation list to be added. If deviations are not listed separately, it will be presumed that the bidder is adhering to all the technical specifications and commercial terms & conditions given in this document.

17) Specific Requirements

The delivery and erection of all equipment shall be so scheduled that it shall be possible to commission within due date from the date of award of PO in order to match with the overall commissioning schedule of Project. The delivery date shall be quoted from the date of issue of PO taking into account the time for approval of technical data sheet and specification of bought out items by the Purchaser. The successful Bidder shall guarantee the material delivery and commissioning dates. Progress report shall be submitted by the successful Bidder at regular intervals on a format prescribed by the purchaser giving the status of approval of drawings, ordering position of equipment and other materials ordered, manufactured, fabricated, delivered and erected.

After placement of purchase order, the following documents shall be submitted for approval.

- a) PERT flowchart indicates schedule of work, technical data sheets/Specification of bought out items
- b) Fabrication drawings
- c) Welder qualification, PQR, WPS
- d) Procedure for qualification of fabricated pipe lines
- e) Quality assurance plan

18) Unit Rates:

The Bidder shall quote item wise units and unit price and total units and total price of items and materials to be supplied and erected under this specification as per Price Bid format. The rates shall be valid until handing over the systems to purchaser and Bidder shall supply or fabricate/**erect** additional quantities (upto +/- 10%), if required for the completion and successful commissioning of the systems on the same rates as quoted. Items not featuring in the BOQ but required for completion of the systems shall be borne by Bidder and shall be

deemed to be included in the bidder's offer. No extra claim for such items shall be entertained after placement of order

19) Safety

- a. All equipment shall be complete with approved safety devices wherever a potential hazard exists and with provision for safe access of personnel to and around equipment for operational and maintenance functions. The design shall include not only those usually furnished with elements of machinery but also the additional covers, stairways, ladders, steel structural platforms for operator's control panels handrails, partitions etc. which are necessary for safe operation of the plant.
- b. All danger and caution notice boards shall be both in English, Hindi and local languages.
- c. When the work is carried out at night with prior approval of purchaser or in the obscure day light, adequate arrangements for flood lighting in the working area shall be made by Bidder at his own cost and got approved by the Purchaser.
- d. The safety posters/regulation for prevention of accidents shall be displayed by the Bidder at appropriate places. Notices and warning signs shall be displayed for all sources of dangers.
- e. All electrical drives and equipment must be equipped with safety devices. The safety provisions shall conform to the recognized standards, safety codes and statutory regulations.
- f. All safety measures as required to be adopted as per the statutory regulations and the safety rules of the plant shall be strictly followed by the Bidder during the execution of the Contract.
- g. Adequate number of first aid boxes as defined in the State Factories Rules shall be provided and maintained at work sites.
- h. The vendor shall ensure that the item supplied by them are absolutely safe for use in the stipulated work environment & confirm to applicable safety norms and standards.
- i. One safety supervisor shall be posted during the erection activities at site. They shall hold the entire responsibility for the events/activities carried out at site.

20) General Conditions:

- a) Sriharikota is an island and situated around 100 kms north of Chennai and the work spot (SLP Complex) is located at about 12 kms from main entrance gate. Conveyance for Contractor personnel from and to work spot has to be arranged by the contractor.
- b) The contractor shall not employ persons below 18 years of age and no female labour shall be employed in dark hours. The contractor shall pay to each person, wages not less than minimum wages specified as per the labour laws.
- c) Conveyance for contractor personnel from and to work spot has to be arranged by the contractor.
- d) Department shall decide the hours of work on the site and the contractor shall adhere to it. Department reserves the right to extend working hours beyond office hours including holidays based upon the progress of work to meet the work schedule/target.
- e) Contractor shall take enough care to ensure to progress the work without any material and personnel damage. It is the sole responsibility of contractor to ensure all safety norms to his personnel during transportation between work spot and Department/Contractor stores, and work in prefabrication area, in storage shed and in yard. Department will not hold responsibility to any mishap to the contractor personnel.
- f) Department's permission shall be obtained by contractor for establishing shed/ office with an under taking for construction of shed with non- flammable material and for demolition of the same after completion of work.
- g) The contractor shall be responsible for the safe storage of radiographic sources of his subcontractor. Radiographic source shall be stored in a room located at FLP complex, which is

about 10km from the work spot. However, the transportation of source from the storage room to the work spot and back shall be the responsibility of the contractor.

- h) The contractor shall give prior intimation to the Department whenever Radiography is planned, and shall be carried out with necessary approvals only between 18:30 hrs to 06:30 hrs (06:30 PM to 06:30 AM) and the area shall be properly barricaded. However, the contractor can take prior approval from the Department for carrying out Radiography during working hours i.e., from 09:00 hrs to 17:30 hrs.
- i) Department will provide electricity required for the job, free of cost. However, all machinery required for above work like welding, grinding, drilling, cutting, etc., has to be arranged by contractor along with necessary Junction boxes, fuses, cables, hoses, etc.,
- j) The contractor shall take prior approval from the Department for awarding sub-contract for full/partial works in the contract and the payment for the sub-contractor shall be the responsibility of the contractor.
- k) The Department reserves the right to pay the sub-contractor directly from the running bills in case if the contractor fails to pay his sub-contractor in the interest of completion of work.
- l) Contractor has to give an undertaking that they will comply with prevailing safety norms at site put forth by Department. Safety officer shall have full access to contractor's storage shed, office at any time for inspection.
- m) The quantity arrived is indicative only. The party shall give undertaking to hold the same quoted unit prices for the additional quantities of 10% of order quantities if site requirement calls for.

n) **Period of contract:**

- Eight (8) months from the date of release of purchase order.

- **Delivery Schedule: Split-up of overall schedule as follows:**

Sl. No.	Description of activity	Time line
1	Release of purchase order	T0
2	Receipt and acceptance of the purchase order	T1 = T0 + 1 weeks
3	Submission of Specification & Technical data sheets of all supply item of deluge System	T1 + 2 weeks
4	Approval of above specifications & Technical data sheets by department	T1 +3 weeks
5	Procurement of materials cleared vide SI No:3	T1 + 3 months
6	Mobilization of teams for pipe line fabrication preparations	T1 + 3 months
7	Completion of Fabrication, Erection & Testing of Deluge system of propellant storages	T1 + 7 months
8	Commissioning of Breathing air, Compressed air and Eye/Face wash shower System shall be completed within one month after Confirmation of Site Clearance by Department	Confirmation of Site Clearance by department + 1 Month

- o) Progress review meetings once in a week will be conducted for monitoring the status of works and the contractor's site representative need to attend with all relevant inputs.
- p) As all works are inter-related, splitting of order is not possible. Hence, bidder shall quote for all items of this tender without which offer will not be considered.
- q) Purchaser reserves right to cancel the order at any stage if the performance of the contractor is not satisfactory and the contractor is not following stipulated Safety/security norms.

- r) Contractor supervisor (Max. two) may be provided with hostel accommodation on chargeable basis depending on availability. Contractor has to arrange accommodation for their employment's outside the island.
- s) The contractor shall clearly indicate deviations if any from indent specifications in the offer; otherwise, to accept all the terms and conditions put by the department.
- t) Contractor shall store the procured items properly and in the event of any damage / loss to those items, the contractor shall replace the same at no cost or the cost of the material damaged shall be recovered from the running bills.
- u) Contractor shall get approval from Department for the specifications of structural in his scope of supply before placing orders for the same. Rolled MS structural material is not acceptable.
- v) Contractor should mobilize all work force, machinery required within one month from date Of Site clearance for commencement of work.

21) Transportation & Material Handling:

The contractor shall ensure:

- a. Own Transport vehicles required for movement of contract personnel from /to work site and Gate I / Sullurupeta, including internal movement within site.
- b. Relevant derricks, hoists and fixtures for leading and positioning equipment's on designated foundations including alignment tools.
- c. Department may provide material handling support on chargeable basis subject to availability.

22) Evaluation of Machinery and Manpower and Consumables:

Machinery and manpower shall be subjected to technical evaluation by the Department Engineer to ascertain their complete suitability / performance for the jobs described above. Based on this evaluation clearance shall be given for taking up the actual job. Work shall be treated as commenced only when the actual welding work is done and as per various technical conditions detailed in this contract.

23. Medical Assistance:

While executing this service contract work, if any of the workers engaged by contract agency is injured, contract agency has to take care of medical treatment.

24. Bidder Minimum Qualification Criteria

The following are the minimum essential criteria to further validate/accept the bid. Vendor is requested to provide all the necessary supporting documents. If any deviation/non-compliances/lack of supporting document bid shall be summarily rejected.

Sl.No	Description	Vendor Compliance With Supporting Documents
1	The Bidder should be Company/Society/Firm registered in India since last 3 (Three) years or more. Company Profile along with documentary evidence of services offered and all relevant enclosures to be submitted.	
2	During Last Three years ending 31.03.2020 , the bidders should have successfully completed either of the following similar work. Realization of Compressed air system, breathing air system and Eye wash & shower system (SS Piping work with Radiography) for Orbital Module Preparation Facility (OMPF), which includes supply, fabrication, erection, testing, painting & commissioning as per the specifications given in Section-A to Section - D . One Similar completed work not less than Rs. 80 Lakhs, Two Similar completed works each not less than Rs. 60 Lakhs each, Three similar completed works each not less than Rs. 40 Lakhs each.	
3	The Bidder's annual financial turnover shall be not less than Rs. 120 lakhs per year during last three financial years ending with 31.03.2020.	
4	PO and Satisfactory Work completion certificate by the end user for the previous executed orders shall be submitted without which offer will not be considered.	
5	Audited balance sheet & Profit & Loss A/c is to be submitted (or) Copy of the IT return filed / audited last 3 years financial statements for Financial years ending with 31.03.2020.	
6	Vendor must undertake supply, erection, testing and commissioning of piping system as per the specifications and requirements indicated in the RFP.	
7	Latest solvency certificate for the current financial year 2020-21 from any Nationalized/Scheduled bank shall be submitted for a value of minimum Rs.40 lakhs.	
8	Technical compliance to the specifications shall be vetted by the bidder.	
9	The firm must provide a self-declaration that there is no complaint/vigilance inquiry against them in any Govt. /Department /PSU and they have not been black listed by any Govt. Department/PSU.	
10	The supplier shall mention his welding team details, equipment's/ machineries, facilities if any.	

Note:

Technical proposal of the bidder, which is not able to substantiate/satisfy the claims made by it with respect to the technical requirements laid down in this RFP, will be summarily rejected.

Offers of those bidders taking full scope of the as per the RFP only will be considered.

Signature of Authorized Person with Seal

25. Bidder Evaluation Criteria. The broad guidelines for evaluation of Bids will be as follows:

Sl.No	Description	Vendor Compliance
1	In respect of Two-Bid system, the technical Bids forwarded by the Bidders will be evaluated by the Department with reference to the technical specifications as mentioned in the RFP. The compliance of Technical Bids would be determined on the basis of the parameters specified in the RFP. The Price Bids of only those Bidders will be opened whose Technical Bids would clear the technical evaluation.	
2	During evaluation, SDSC SHAR may request Bidder for any clarification on the bid, additional documents.	
3	Bidder must provide the point-by-point compliance to the technical specifications along with deviations. The tender can be rejected if the deviations are not acceptable to the Department.	
4	Performance of Bidder on similar nature of works executed/ under execution shall be taken into consideration before selecting the Bidder for opening his price bid.	
5	The time schedule for completion is given in the Proposal document. Bidder is required to confirm the completion period unconditionally.	
6	SDSC SHAR reserves the right to reject any bid if technically/commercially not meeting the requirement/terms & conditions. Such decisions by the SDSC SHAR shall bear no liability whatsoever consequent upon such decision.	
7	Total price inclusive of all taxes, duties, shall be considered for arriving L1 (Overall Lowest) and awarding the contract as per the procedures.	
8	If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.	
9	As all the items within RFP are inter dependent, splitting of the order/WORK is not possible. Hence Overall lowest bidder will be considered	
10	Department reserves the right to inspect the contractor shop floor/premises for evaluation, if required. After evaluating the contractor, decision of the Department is final.	
11	The supplier shall mention his welding team details, equipment's / machineries, facilities if any	

NOTE:

- Technical proposal of the bidder, which is not able to substantiate/satisfy the claims made by it with respect to the technical requirements laid down in this RFP, will be summarily rejected.
- Offers of those bidders taking full scope of the work supply, erection, testing and commissioning of piping circuits as per the requirements indicated in the RFP only will be considered.

Signature of Authorized Person with Seal

Section – B
Technical Specification
Of the works to be carried out at Site

Sl. No.	Description	
1	Procedure for SS piping Fabrication, erection, Testing & Commissioning	Chapter-1
2	Procedure for Stainless steel piping system erection works	Annexure-1
3	Procedure for Fabrication and Erection of M.S Structural Steel	Annexure-2
4	Procedure for providing RCC pipe pedestals, Equipment foundation and related Civil Works	Annexure-3
5	Procedure for Application of Wrapping and Coating Materials for SS buried Underground Piping	Annexure-4
6	Erection of Equipment (Air receiver)	Annexure-5

Specification for fabrication, erection, testing and commissioning of Stainless steel Pipelines for Compressed air & Breathing air system and Eye wash showers system of orbital module preparation facility (OMPF), including supply of pipes, pipe fittings, Equipment and flow components.

1. Introduction:

This specification is for fabrication, erection, testing and commissioning of Stainless steel pipes for Compressed air & Breathing air system over pipe pedestals, pipe trenches at road/rail crossings, erection of pipe line inside orbital module preparation facility (OMPF), supply of Equipment like SS air receiver, Breathing air purifiers, SS pipes & fittings, flow components like SS ball valves, Filters, Eye and face wash showers, pressure regulators, pressure gauges etc., at SDSC SHAR Centre, Sriharikota.

These works are required to be carried out at SDSC SHAR Sriharikota which is about 100 Km from Chennai and 20 km from Sullurpetta.

2. Scope of Work:

Scope of work covered under this contract includes Supply, fabrication, erection, testing and commissioning of Stainless steel pipes for Compressed air & Breathing air system and eye wash system over pipe pedestals, pipe trenches at road/rail crossings, erection of pipe line inside Eye/face wash Erection showers for orbital module preparation facility (OMPF), in pipe corridors, platforms including supply of SS pipes & fittings, Equipment like SS air receiver, Breathing air purifiers, flow components like SS ball valves, Filters, Eye and face wash showers, pressure regulators, pressure gauges etc., as per P & I Diagram & layout drawing given in annexure

The work also includes 10% of radiography of the butt welded joints, DP testing (All weld joints from root pass to final pass), Hydro testing, pickling & passivation, painting and commissioning of above systems and interconnection with the existing systems.

Note:

- i. Supply of all pipes and pipe fittings (Stainless steel), SS air receiver, breathing air purifiers, flow components like Manual ball valves, Eye and face wash showers, Filters, pressure regulators, pressure gauges etc., required for carrying out this work is under the scope of contractor.
- ii. Fabrication, erection, testing, Pickling & passivation and commissioning of Stainless steel pipe lines (SS304L) for compressed air & breathing air system along with associated flow components like SS ball valves, filter regulators, pressure gauges etc., The Pipe size varying from 50 NB to 15 NB.
- iii. Fabrication, erection, testing and commissioning of Stainless steel pipe lines (SS316L) for Eye wash shower system along with associated flow components like SS ball valves, pressure gauges etc., The Pipe size varying from 40 NB to 15 NB.
- iv. Structural steel fabrication works related to pipeline supports and platforms of about height of about 6m.

3.0 DETAILED SCOPE OF WORK:

3.1 Fabrication (Butt-welding & Socket Welding) and erection of Stainless steel pipe (SS304L/316L) TIG Welding and Radiography of Butt-welding weld joints

This work includes marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, DP testing of Root & Final Pass (Both Butt and Socket weld types), X-Ray/gamma Ray radiography (for 10% Butt weld joints).

- Fabrication of Stainless steel piping by butt welding / socket welding.
- All butt weld joints are 10% radiographed. (X ray 2-2T)
- Welding consumables, men & machineries are in the scope of supplier.

3.1.1 The work covers stainless steel welding of SS 304/304L/316/316L butt/socket.

3.1.2 The scope of welding of joints includes all associated works with making each joint including marking, cutting, profiling, aligning, fit up, Tack welding, cleaning, chipping, placement of wind shields and / or weather protection, root and Final welding.

3.1.3 Argon Gas TIG welding is to be adopted for root pass and subsequent passes. DP test of welds need to be carried out for each weld joint (BW) for root and final pass. The purity of Argon Gas used for TIG welding and purging should be of 99.99%. Cleaning of all welds with SS wire brush for stainless steel materials.

3.1.4. Only Qualified welder to a Level of 6G as per ASME Sec. IX, will be permitted for carrying out of the welding work. Qualification of welder need to be carried out in the presence of Department representative suiting to the pipe size/schedule requirements. The welder qualification has to be carried out at Sriharikota only. The Fitters / Fabricators / Grinders should be of well experienced persons.

3.1.5. It is the responsibility of the supplier to produce sound weld joints. If any, defective of welds are noticed during radiography film review, they have to be rectified by the contractor.

3.1.6 Dye-Penetrant Test: All welding joints shall be tested with Dye-penetrant test after root pass and final pass welding for both Butt welding and Fillet / Socket welds as per ASME Sec. V.

The unit price quoted for welding (Socket & Butt) of stainless steel piping system shall be in **inch. Dia** basis.

3.2 SCOPE OF THE SUPPLIER:

Machinery & Man Power required for Three /Four independent teams for SS piping works. The teams shall work if required, on three-shift basis based on site requirement to complete the work within the stipulated period.

Requisite machinery like TIG welding machine, arc welding machine, grinders-angle/pencil, gas cutting sets and bench / hand drilling machines and concrete drillers, tube benders, pipe cutting machine & hydro test pump shall be mobilized by the contractor for the above scope of work.

Adequate skilled, semi-skilled manpower like 6G qualified TIG pipe welders, arc welders, fitter /fabricator, grinders, un-skilled helper gangs and site supervisor (Degree/Diploma in Mechanical Engg) with minimum 3-5-year experience in carrying out similar Fabrication works & documentation, and Quality & safety personal shall also be deployed throughout the contract period.

Since the fabrication, erection & commissioning has to be carried out within the stipulated period, the contractor has to engage multiple teams and shall plan work in three shifts if required and also contractor shall engage sufficient numbers of batches to complete the work within the stipulated period of eight months.

Extra machinery and teams shall be deployed in case of site requirement calls for to meet time schedule within 2-3 days

One welding team includes 6G qualified pipe welder (1 no), Fitter/Fabricator (1 no), Grinder (1 no) & helper (1 no).

The machineries like TIG welding machine (Portable) with accessories, Grinding machine, welding electrodes are in the scope of supplier.

3.3 Consumables:

The consumables such as SS Filler wires (ER SS 308 L / 316 L), for MS structural welding electrodes (E 7018 / E 6013), Grinding Wheels, Industrial Gases (Oxygen / Acetylene), Gas cutting set, Argon gas, Dye-Penetrant Test Kit, Argon regulator, Flow Meters, Face shields, Gloves, SS Wire Brush, SS alignment shim plates of various sizes, Emery cloth, etc., required for the work shall be in the scope of contractor

- **SS Filler Wires:** Size 1.6 mm / 2.0 mm / 2.5 mm, Make (Philips / ESAB / Advani). Manufacturers material test certificates shall be produced for approval.
- **Electrodes for Structural:** Size 2.5 mm / 3.15 mm, Make (Philips / ESAB / Advani). Manufacturers material test certificates shall be produced for approval.
- **Argon Gas cylinder & Oxy / Acetylene cylinders:** Grade Commercial, Purity 99.99%, Cylinder Capacity 50 Ltrs, Make (Praxair / Bhoruka / Inox / BOC)
- **Dye-Penetrant test Kit** Containing cleaner / Penetrant / Developer, Make (Magnaflux / Check Mate)
- Grinding wheels: Make Universal carburandum/ Norton
- Oxy- Acetylene cylinders: Capacity: 50 Lit, Pressure 140-150 bar (g)
- **Supply of chemicals required for Degreasing, Pickling & Passivation**
- Hydro test pump for conducting hydro test.

Note: Contractor has to provide all the welding consumables materials TC's for department engineer review and the material shall be used after getting the clearance only.

3.4. Deployment of supervisor:

It is the responsibility of the supplier to depute one experienced supervisor for coordinating the following works at site irrespective of no. of batches.

- Discussion and Finalization of nature of fabrication works with Department Engineers
- Collection and mobilization of required Pipes/Fittings/Consumables etc.,
- Co-ordination with Quality Assurance/Site Engineers for fabrication, Deployment of required manpower, Safety precautions

3.5 Deployment of manpower and Machinery:

- Adequate skilled, semi-skilled manpower like 6G qualified TIG pipe welders, arc welders, fitter / fabricator, grinders, un-skilled helper gangs and site supervisor (Degree/Diploma in Mechanical Engg) with minimum 3-5-year experience in carrying out similar Fabrication works & documentation, and Quality & safety personal shall also be deployed throughout the contract period.
- The purchaser reserves right to Demand for Deployment of multiple batches at a time for the timely completion of project works. Hence the supplier should have capacity to mobilize required number of batches for successful completion of the work.

3.6 Mobilization:

The supplier has to mobilize men and machinery including internal mobilization during works by his own arrangement.

3.7 Qualification of Butt-Weld Joints:

All butt-welds shall be subjected to 10% Radiographic Examination as per ASME Section-V for a sensitivity of 2-2T. All shop welded joints, and in-situ joints shall be radiographed by using X-Ray/Gama-Ray. Interpretation of weld joints radiographs shall be done by Department Engineers as per relevant construction codes such ANSI B 31.3 and ASME-Sec-V.

3.8 Evaluation of Machinery and Manpower:

Machinery and manpower shall be subjected to Technical Evaluation by the Department Engineer to ascertain their complete suitability /performance for the jobs described above. Based on this Evaluation clearance shall be given for taking up the actual job.

3.9 Radiography works:

- The Radiography is required to be carried out in stainless steel pipe line/fittings, in storages and yard. The thickness range from 1mm to 10mm. The type of weld joints are pipe to pipe, pipe to fittings, fittings to fittings, etc
- Gamma-ray technique shall be followed
- Image quality (sensitivity) level required for Radiography shall be at least 2% (2-2T) for both X-ray and gamma-ray.
- The Evaluation of Radiography shall be in accordance with ASME Sec-V boiler and pressure vessel code.
- The penetrometer used shall confirm to ASTME 1025/ASTM E747 (or) relevant DIN standards.
- The Radiography film grades of D5 (Agfagevaret) / NDT -55
- (DuPont) and size 5" X 3" shall be used for both X-ray and gamma-ray for pipe line joints.
- Safety code IS 258 is to be strictly followed while carrying – out Radiography.

3.9.1 Scope of the Radiography Contract: -

- Mobilization of men and machinery such as X-ray machines, gamma ray source, penetrometer, screens, Films, developing chemicals, Radiation sign boards, warning Lamps, red flags, survey meter etc. required to carry out Radiography.
- Radiography film processing facility need to be established by the contractor. Alternatively based on availability the existing facilities shall be spared duly authorized by the department based on the request from the supplier.
- Repeat radiography due to rejection of Radiograph owing to bad image quality shall be at the cost of contractor.
- Radiography shall be carried out by qualified technicians (i.e.) minimum level-I of ISNT/ASNT and qualification certificates shall be produced with latest renewal to the department before proceeding to the work.
- For handling Gamma – ray source, the radiographer has to posses valid certificate issued by BARC.
- Necessary clearance has to be obtained from concerned authorities (DAE /BARC) for moving Gamma ray source from the contactor's work place to Sriharikota, before every visit to Sriharikota.
- Radiography film shall be evaluated and report shall be submitted by Level II ISNT/ASNT (or) equivalent qualified person/TPI/ Department engineer.
- Radiography shall be carried out during night time only.
- The Radiographer's who are going to be engaged to carry out the Radiography work should have insurance coverage.

3.10 Pipe bending works:

- The Pipe lines having line size of 40NB, 25NB, 20NB and 15NB can be bent using standard pipe bending machines. Hence required machinery is in the scope of supplier.

4.0 Stainless steel piping system erection:

Erection of piping includes doubling of pipes, positioning of completed pipeline segments at required locations as per isometric drawings, piping layouts and instructions of department focal points depending on the site conditions.

This work includes alignment of pipes & pipe fittings, maintenance of required slopes, providing necessary SS Fasteners,SS Spiral wound gaskets,SS 'U'-clamps, fixing of flow components, pipe fittings & instruments and laying such pipelines over structural pipe supports/ RCC pedestals, in trenches and in Hume pipes.

The unit price quoted for fabrication {welding (Socket & Butt)} of stainless steel piping system shall be in **inch. dia** basis.

The unit price quoted for erection of piping system is in **inch. meter** basis considering SS piping Erection, assembly of flow components, Hydro test, Pickling-Passivation& commissioning of SS pipes like cleanliness checks assembly of Instruments, wrapper coating of pipe line in road crossings, pneumatic testing to the pipe lines, providing necessary SS Fasteners, SS Spiral wound gaskets, SS 'U'-Clamps fixing and Painting of pipe lines and Tag Numbers. Erection, installation of flow components, equipment, instruments etc. Scuff holding required for erecting pipe lines at 6 meters elevation is in the scope of the supplier. The work also includes integration of such pipelines with existing piping network/equipment including proper clamping of pipes on supports.

5.0 MS Structural Fabrication works:

- Fabrication of MS structural pipe supports, access platforms and approach ladders shall be carried out by means of SMAW welding with arc electrodes of AWS E6010/E6011/E6013. Drilling and / or bolting as defined in the approved drawings. Drilling and anchoring of pipe supports, hangers and other wall / floor / roof embedment shall be carried out as required.
- Supplier shall supply M.S structural material about 5000kg consisting of channels, angles, M.S plates etc., as per IS:2062 of reputed makes like TATA/SAIL/RINL/VSP (Rerolled structures not acceptable) and carry out fabrication & Erection and painting. The individual quantity of structural sections will be provided after placement of order.

6.0 Wrapper coating:

Wrapper coating of Stainless Steel pipes inside Hume pipe with 4 mm thick multi layer wrapper coating tapes as per AWWA C203.

7.0 Testing:

After satisfactory completion of fabrication and erection, Hydrostatic test shall be carried out with DM water at 22 bar for SS pipe lines as per ASTM A 530.

7.1 Sequence of Testing (for SS piping):

- Flushing of piping segments with DM water
- Hydro test as per ASTM A 530.
- Pickling and passivation (As Per the annexure-1)
- Purging of all circuits with compressed air.
- Replacement of test gaskets with actual gaskets.
- Cleanliness check of fluid circuits.
- Leak check with operating fluid of the total system as an integrated system ready for process functional checks at operating conditions.

Note: Hydro test set up, Valves, flanges, spool pieces etc., including Pump, Hose and etc., required for conducting Hydro Tests shall be mobilized by contractor.

8.0 Painting:

After successful fabrication, erection and testing of piping circuits, the entire pipelines, flow components and structures shall be painted and Pipelines & flow components shall be Tag numbered. The scope of contract includes supply of requisite paints and carrying out painting and tag numbering as per annexure-1

9.0 Transportation & Material Handling: The contractor shall ensure:

- Own Transport vehicles required for movement of contract personnel from /to work site and Gate I / Sullurpetta, including internal movement within site.
- Relevant derricks, hoists and fixtures for handling and positioning of pipelines & equipment on designated pipe pedestals/pipe trenches /foundations including alignment tools.
- Material handling support for pipes transportation from department stores which is about 4-5km to work spot will be arranged by department on chargeable basis and subject to availability.

- Handling of pipes in yard and placing pipes on RCC pedestals ,pipe supports in trenches and inside orbital module preparation facility (OMPF), after fabrication is in the scope of the contractor.
- For erection of Major piping/equipment if any, Department may provide material handling support on chargeable basis.

10.0 Electrical:

- The contractor shall ensure Safe distribution of electrical power from single point source identified by Department to various contractors' utility points / equipment.
- The nearest power source point will be 250m-350m from the actual work site in yard. Necessary cables have to be arranged by contractor along with junction boxes, fuses, circuit breakers etc., as per the mandatory requirements of department electrical safety.

11..0 The following are minimum requirements need to be ensured by contract agency:

11.1 Evaluation of Machinery, Manpower and Consumables:

Machinery and manpower shall be subjected to technical evaluation by the Department Engineer to ascertain their complete suitability / performance for the jobs described above. Based on this evaluation clearance shall be given for taking up the actual job. Work shall be treated as commenced only when the actual welding work is done and as per various technical conditions detailed in this contract.

11.2 Group Insurance:

Group Insurance for the manpower engaged shall be insured for this work. The proof of such claim shall be submitted immediately after awarding the contract.

11.3 Medical Assistance:

While executing this service contract work, if any of the workers engaged by contract agency is injured, contract agency has to take care of medical treatment.

11.4 Inspection and Documentation:

Inspection and clearance for pipe fit up, root

DP, final DP, alignment checks etc.,

After awarding the contract: Contractor has to submit the following for approval.

- a. Work execution plan / PERT. And manpower deployment plan.
 - Procedures for approval (Radiography, hydro, conditioning of Pipelines & painting, etc.)
 - Monthly & weekly schedule.
- b. During the execution of work:
 1. Preparation of Material identification
 2. Preparation of line and weld history sheets
 3. Preparation of test packs and reports.
 4. Preparation of as built drawings.
- c. After commissioning (3 sets Hard copies and one soft copy)):
 1. Submission of as built drawings.
 2. Submission of final test dossier with neatly bounded condition.

12.0 Scope of Supply of Department:

- **SS Pipes and SS pipe fittings and SS flanges.**
- Potable water/DM water will be supplied free of charge by Department at specified tapping points.
- Electricity required for machine tools like grinders, welding machine etc., (Will be provided at the nearest available power point which may be around 200-250m from the proposed area of work)
- Radiography source pit and dark room for development of films.
- Calibration of pressure gauges required for conducting hydro test.

13. LIST OF DRAWINGS:

Sl. No.	Drawing No.	Description
1	SS/OMP/CA/AB/OVERALL LAYOUT/01	Overall layout of OMP Facilities
2.	SS/OMP/CA/AB/P&I/01	P & I Diagram of CA & BA System
3.	SS/OMP/CA/AB/AIR RECEIVER/01	SS Air Receiver
4.	SS/OMP/CA, BA & EYE WASH SHOWER SYSTEM LAY OUT/01	Details of CA, BA & EYE WASH SHOWER UNITS

14. Details of procedure:

Sl. No.	Annexure	Description
1.	Annexure-1	Procedure for Stainless steel piping system erection works
2.	Annexure-2	Procedure for Fabrication and Erection of M.S Structural Steel
3.	Annexure-3	Procedure for providing RCC pipe pedestals, Equipment foundation and related Civil Works
4.	Annexure-4	Procedure for Application of Wrapping and Coating Materials for SS buried Underground Piping
5.	Annexure-5	Erection of Equipment (Air receiver)

Procedure for Stainless steel piping system erection works:

1. SS piping erection includes Installation of flow components like Ball valves, filters, Pressure regulators, SRV's, check valves with required SS Spiral wound metallic gaskets and mounting of Instruments like pressure gauges, pressure transmitters etc., as per P&I diagram.
2. Erection work also includes providing supports from pedestals and also from concrete wall by using anchor fasteners where ever required, U-clamp fixing, Hydro testing, Pickling – Passivation, cleanliness checks, testing at Max. Operating pressure, painting of pipe lines and tag numbers as per P&I diagram and commissioning as per the details given below point 3 to point 6
3. Erection of piping includes doubling of pipes, positioning of completed pipeline segments at required locations as per isometric drawings, piping layouts and instructions of department focal points depending on the site conditions.
4. This work includes alignment of pipes & pipe fittings, maintenance of required slopes, providing necessary U-clamps, Gaskets, fixing of flow components & instruments as per P&I and laying such pipelines over structural pipe supports/ RCC pedestals, in trenches, in Hume pipes etc., with proper supports.
5. The work also includes integration of such pipelines with equipment including proper clamping of pipes on such supports.
6. After the pipe spool pieces fabrication & qualification, they are to be assembled with flow components & equipment as per the P & ID.

A. Erection of flow components:

The items procured and supplied by the contractor like Manual ball valves, safety relief valves, pressure gauges, Pressure transmitters etc., are to be assembled with the piping system as per the P & ID.

Hence as per P & ID, end to end system is to be made with all the flow components & piping system.

B. Hydro testing of welded pipe lengths & Commissioning

Scope of work:

- Hydro testing of welded pipe lengths / spool pieces with pipe fittings and flanges.
- Assembly of flow components/ pipe spools with gaskets
- Commissioning of the system including dew point checks, leak checks.

Hydro testing

Hydrostatic / Pneumatic leak checks on completed piping segments shall be carried out at defined pressure rating as informed by the department personnel. Hydrostatic test shall be carried out with DM water for SS Pipe lines (water will be free issue by Department).

The items required for hydro test like hydro test pump, calibrated pressure gauges, blinds etc. are in the scope of supplier.

Sequence of Testing for SS Pipelines:

- Flushing of piping segments with DM water.
- Hydro test as per department specified pressures.
- Flushing of all circuits with DM water.
- Replacement of test gaskets with actual gaskets.
- Purging of all circuits with dry / N₂ gas with requisite dew point.
- Cleanliness check of fluid circuits.
- Pneumatic leak test of the total system as an integrated system ready for process functional checks at operating conditions.

Commissioning of the system:

- The total system shall be commissioned end to end to meet the purchaser's requirement.
- Commissioning includes assembly of flow components with gaskets. The joints shall be tightened by SS studs
- The total system shall be leak checked with N₂ gas at operating pressure condition.
- All the flow components shall be functional tested.
- After the satisfactory performance of leak testing & flow components testing, the system will be subjected to actual working fluid.
- The total system is subjected to test & evaluation as per department procedure. Supplier also shall involve during such activities.
- The system will be declared as commissioned after performance testing of the integrated system.

C. Specification for Pickling & passivation (for SS Pipe lines only)

1. Pickling: This is carried out after mechanical cleaning and degreasing operations to remove all the rusts and scales. Pickling is carried out with a solution containing Hydrofluoric acid and Nitric acid. The composition of the pickling solution and duration of pickling are adjusted after trial test on a sample piece to remove uniformly less than 25 microns thick material. The composition is as follows:

HNO ₃	-	15 to 20% by volume
HF	-	2 to 5% by volume
DM Water	-	Balance
Temperature	-	Ambient
Duration	-	2 hours

After pickling, rinsing with ordinary potable water until all the acid traces are removed. The bath solution has to be changed if the level of Iron in the bath reaches 8 grams/liter.

2. Passivation: This is done after the pickling operation, a solution having the following specifications shall be used.

HNO ₃	-	25% by volume
DM Water	-	75% by volume
Temperature	-	Ambient

Duration of the passivation should be minimum 2 hours. The bath solution has to be analyzed frequently and the bath replenished if the level of iron exceed 5 g/liter. Finally rinsing with demineralised water (conductivity less than 10 micro siemens/cm) is carried out till final rinse water PH is between 6.5 to 7.5 to minimize staining.

3. Checking of chemicals used for pickling & Passivation

- Test for acid after pickling and passivation:

After rinsing with water/DM water, the washings shall be checked with methyl orange indicator until the colour becomes golden yellow. A red colour shows the presence of acid and rinsing shall be continued.

- Test for fluoride: This shall be done using Zirconium Oxy Chloride solution using Xylenol Orange as indicator. The bleaching of Zirconium Xylenol orange complex will indicates the presence of fluoride.

- Determination of acid concentration: Pipette out 25 ml of pickling or passivation bath solution into 100 ml flask. Dilute to 100 ml with distilled water, pipette 20 ml of this solution into 250 ml flask and dilute to 100 ml with distilled water. Add 2/3 drops of methyl orange indicator and Titrate against N/2 NaOH contained in a burette. Take reading when colour change from (red to yellow) (pink to yellow).

$$\text{Percentage of acid} = \text{No. of ml} \times 0.67$$

- Estimation of iron: Pipette out 10 ml of solution into a flask and dilute it to 100 ml with distilled water. Pipette 10 ml of dilute solution into flask and add 10 ml of 50% Sulphuric acid.

Titrate against N/10 KMNO₄ solution till the pink colour persists for about 15 seconds.

$$\text{Percentage of iron} = \text{No. of ml of N/10 KMNO}_4 \times 0.56$$

- Inspection after cleaning for the presence of free iron:

- Copper Sulphate Test
- Ferroxyl test

For all testing, the contractor shall establish a small laboratory facility on his own and all chemicals purchased by the contractor will be subjected to the approval of inspection agency.

4 Drying : The drying is done on Tanks as well as piping to remove water and this is done as given below: Oil free compressed air dew point less than -40 Deg. C is used to purge initially. Purging with dry Nitrogen having Dew point less than -40 Deg. C and free from oil and greases (less than 10 PPM at 60 Deg. C till the moisture level at the exit comes to the inlet concentration value.

5 Sealing: After drying, the pipes/equipments/tanks/pumps should be sealed so that ambient moisture never enters inside. The pipes/equipments/tanks/pumps tanks are to be pressurized to 0.5 bar with dry N₂ gas at -40° C dew point Temperature.

6. General conditions:

- The pipelines after welding & radiography/hydro test will be subjected to pickling & passivation.
- The spool pieces / yard length pipe lines will be subjected to pickling & passivation. The spool pieces shall be pickled & passivated by holding method whereas the yard length line shall be pickled & passivated by holding & circulation method.
- The external & internal surface of the weld joints of the pipe lines are to be pickled & passivated.
- The chemicals, pump, PVC hoses, testing equipment, plastic drums are in the scope of supplier

D. Painting works

A. Scope of work:

- Painting of equipment's& pipe lines.
- Painting of structural items & hand rails
- Tag numbering of flow components
- Painting of pipe line numbers / designation

B. Painting of all equipment/pipe lines:

- The paints to be applied are special type (epoxy paints) i.e. two component paints. Both the components (3:1 ratio) are to be mixed and applied immediately on mixing. All the surfaces shall be applied with one coat of primer & one coat of finish coat.
- In order to protect the surface of the pipe lines and equipment from rust and dry coastal saline weather, application of primer and finish coat paint shall be carried out.
- The metal surface shall be cleaned thoroughly for surface preparation with Stainless Steel brushes for pipelines and Mild Steel for structural as applicable.
- A high build epoxy primer suitable for Stainless Steel surface of 120 +/- 10-micron Dry Film Thickness (DFT) followed by a finish coat of aliphatic / acrylic, polyurethane finish paint of 40 microns DFT shall be applied so that the total DFT achieved will be 150 +/- 10 microns.
- The tag numbering of pipelines and flow components shall be written at appropriate places as per P & I diagram.
- All paints and necessary consumables fall under the scope of the contractor.
- For equipments (Air Receivers and Accumulators) spray painting shall be employed. The spray gun is in the scope of supplier. The source of Air will be provided by the department.

C Painting of Structures/platforms:

Painting of MS pipe Supports/Structures, platforms includes surface preparation, mixing and application of paints.

Primer & Final coat as per required thickness. All paints and necessary consumables fall under the scope of the contractor.

Painting Scheme shall be followed **as** given below:

- Epoxy mastic coating : 120 - 130 microns
- Aliphatic Polyurethane : 30 - 40 microns
- Total Dry film thickness : 150 +/- 10 microns

Colour scheme: The colour code scheme for compressed air, breathing air and eye wash shower lines etc. and in general as per relevant Indian standards and which will be applicable for final coat.

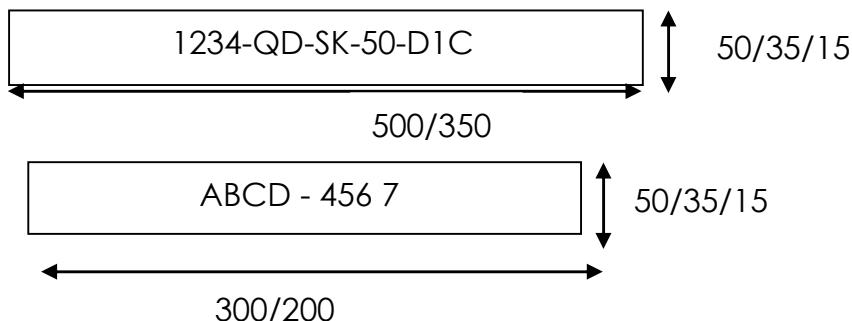
The finish colour shade of compressed air system is sky Blue as per IS-101

The finish colour shade of eye wash and shower system is Sea Green as per IS 217

The finish colour shade of breathing air system is white

Tag numbering / Pipe line numbering:

Numbers are to be painted on the pipelines using white synthetic enamel paint on a black back ground painted surface as follows:



Height, width & thickness of letters/numbers are 25, 50 & 5 mm respectively. One set consists of numbering with white enamel on a black background. Black background is to be painted prior to numbering with stencils.

General conditions:

- Experienced painters shall be employed.
- Spray painting / manual brush mode painting shall be employed.
- While painting uniform DFT shall be maintained.
- The brushes, waste/ cotton cloths, spray gun are in the scope of supplier.
- Paint / Thinner should not be wasted.
- Tag numbering / pipe line numbers will be provided at the time of painting works.
(Paints procured shall be from the reputed makes like Berger / CDC Carboiline / Asian Paints / Bombay Paints/ Goodlas Nuralac/GPC only).

a. For flow components:

Finish coat of aliphatic / acrylic, polyurethane finish paint of 40 microns DFT shall be applied. **The colour shade of flow components is Azure Blue.**

The contractor shall take clearance from department engineers prior to application of paint and The final DFT measurement shall be offered for inspection.

b. For MS Structural:

Epoxy Mastic coating (primer): 120-130 (DFT)
Aliphatic polyurethane (Finish coat): 30-40 microns DFT
Total DFT achieved will be 150 +/- 10 microns.

The finish colour shade: Structural Grey as per IS:631

The contractor shall take clearance from department engineers prior to application of paint and the final DFT measurement shall be offered for inspection.

Procedure for Fabrication and Erection of M.S Structural Steel

The scope includes the MS structural steel supply, fabrication, assembly and installation of all types and size of structures like truss/frame works structural supports, base plates Working platforms, hand rails, pipe supports and cable tray works and any other type structures as per the design.

It also includes supply of foundation bolts, Hilti anchor bolts, studs/ bolts & fabrication, cutting, drilling, welding, assembly, installation, fixing of bolts and providing necessary torque after installations and adjustment of the structures according to the requirements at specified locations.

There shall be no limitation to the number of welds or drillings to be carried out per kilogram of the structural works.

The work includes pipeline supports at ISROsene storage, DPT, SC120LOX etc., 8m height pipe rack for routing of pipes as per the piping layout, Elevated platforms with staircase for all the monitors, elevated platforms with staircase, cross over platforms for pipelines & platforms for Manual valves etc., at the tentative locations shown in layout drawing.

Structural Sections : Material shall conform to IS 2062 Grade E 275BR.

Base Plates : Material shall conform to IS 2062 Grade E 275BR.

Chequered plates : Material shall conform to IS 2062 Grade E 250 A and requirement for chequered plates shall conform to IS3502.

Foundation Bolts : Conforming to IS 5624, including washer and hexagon nut conforming to IS 1360 (Part3).

Studs : Material of full threaded Studs shall conform to ASTM A193GR.B7 and hexagonal nut shall conform to ASTM A194 GR.2H.

- The dimension of studs and nuts shall conform to IS 1367. Flat washers shall suit to corresponding stud size. One set shall contain a stud, two nuts and two washers.
- All fasteners shall be surface treated (Hot dip galvanized/ Teflon coated) for corrosion resistant.

1.0 Specification for MS Fabrication:

1.1 Fabrication of MS pipe supports, structural platforms, cable trays shall be carried out by means SMAW welding with arc electrodes of AWS E 7018.

1.2 Drilling and anchoring of pipe supports on floor & wall, welding on wall / floor / roof embedment shall be carried out wherever required and after completing the erection and testing of the piping and equipment.

1.3 The procurement of MS structural materials like angles, channels, cable trays etc., is in the scope of the contractor which is already mentioned in the supply portion of the tender.

1.4 All necessary handling, transportation, measuring, cutting, drilling, fabrication are to be carried out by the Contractor.

1.5 Electrodes for Structural: Size 2.5 mm/3.15 mm, Make (Philips/ESAB/Advani).

2.0 General conditions:

2.1 Separate ARC welding teams should be available for carrying out the structural fabrication works.

2.2 Experienced welder, fitter and helpers should be available in each team.

2.3 The machineries, grinding wheel/ cutting wheel, drilling machines are in the scope of the supplier and they should be in good conditions. The machineries and consumable will be evaluated by the purchaser before actual use for fabrication works. Gas cutting set & arc welding machine with accessories are in the scope of supplier.

2.4 The supplier has to provide multiple teams based on the requirement to complete the project in time else penalty clause will be imposed.

Sl. No	Description	Qty
1	MS structural fabrication works: Fabrication of (Arc welding) of platforms, pipe supports & hand rails and anchoring works	3 tons

Procedure for providing RCC pipe pedestals, Equipment foundation and related Civil Works

The scope of work shall include foundations for pipe supports and structural supports which are not provided by the department.

It also includes supply of steel reinforcement rods, binding wires, cement, sand, granite stone aggregate, gravel, cement concrete interlocking paver block etc. and the work includes excavations of earth for making foundations of structures and equipment.

The typical works under this heading include the following:

- a. Excavation of earth, leveling for laying the pipelines, providing RCC pipe Pedestals.
- b. Filling of earth after construction of pipe pedestals.
- c. Pedestals with foundation bolts/Embedment plates for pipe lines / equipment, pipe supports and elevated structural platforms.
- d. Grouting of equipment, pipe supports, structural works by PCC/RCC.

The composition shall be as follows:

PCC -	Cement: Sand: Gravel	=	1:4:8
RCC -	Cement: Sand: Gravel	=	1:1.5:3
Plastering -	Cement: Sand	=	1:5

Sequence to be followed for Construction of RCC pipe pedestals, Equipment foundation of works:

1	Earth work:
	Earthwork in excavation for pipe pedestals, chambers and Trenches for pipelines in all kinds of soils including dressing of sides, ramming of bottom prior to laying of pipelines and back filling and leveling after completion of Pipeline testing.
2	Shuttering:
	Providing rigid and water tight centering and shuttering using best quality wood/ plywood/ steel forms and centering with steel props, acorn tubes etc., including strutting, propping, bracing, staging etc., complete for all RCC items fixed in position as required including labour for careful removal of form work etc.,
3	RCC:
	Providing & laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, using graded hard granite stone aggregates of maximum 20mm nominal (downgraded) size obtained from approved quarry including fine aggregates conforming to latest IS 383 and cement all as per approved design mix proportions conforming to latest IS 10262 with minimum cement content for durability and plasticizer including supplying and providing concrete cover blocks etc., which shall be followed as per latest IS456-2000 including mixing, transporting, placing, vibrating, compaction, finishing to required levels, curing etc., as per approved Drawing.
4	Reinforcement:
	Steel reinforcement with high yield strength deformed bars of SAIL/RINL/TATA or equivalent approved brands for all R.C.C items including decoying, cutting, hooking, bending, cranking, fabricating to required shape, placing in position and tying the system with soft drawn annealed binding wire of diameter not less than 1.00mm with 2 strands etc., complete all as per specifications.
5	Plastering:
	Water proof cement plastering of thickness as specified below in cement mortar 1:3 (1 cement : 3 coarse sand) mixed with approved water proofing compound such as ROFFE HYPROOF manufactured by M/s Ruffle Construction Chemicals Pvt. Ltd. at 140ml per bag of cement or CONPLAST X 421 IC of Forsook Chemicals Ltd. at 130ml per bag of cement or equivalent approved make as per manufacturers specifications including curing complete for Internal surfaces and projected portion from ground level for external surface.

Annexure - 4.

**Procedure for Application of Wrapping and Coating Materials for SS buried
Underground Piping**

The scope of work includes supply of synthetic primer coating, type B conforming to IS 9912/AWWA C203, 4mm thick coal tar based anticorrosion tape conforming to IS 15337/AWWA C203 and the application of underground pipes coating and wrapping shall be done according to code of practice IS 10221.

The pipe surface shall be degreased and the rusts shall be cleaned by means of blast cleaning before applying paints. The minimum acceptable standard of blast cleaning shall SA 2.5 as per Swedish Standard SIS-05-5900-1967 or equivalent.

Priming shall be done within 4 hours of completion of cleaning. One coat of synthetic primer shall be applied on pipes immediately after cleaning either by brush or spray. The primer shall be allowed to become touch dry prior to wrapping the tape.

Before wrapping the coal tar based anticorrosion tape to the pipe, the primer-coated pipe shall be gently heated by a run of LPG torch or suitable heat source. The tape shall be wrapped either by spiral or circumferential method to the pipe and there shall be a minimum of 12.5 mm overlap per single wrap.

Overlap on each side of weld joint shall be a minimum of 50 mm. In wrapping application, care shall be taken that there are no air pockets or bubbles beneath tape and tape shall be in intimate contact with the primed steel.

After wrapper coating the coated portion shall be tested with Haliday tester.

Annexure-5.
Erection of Equipment (Air receiver)

1. Scope of works:

Erection of equipment's viz., Air receivers etc., and Grouting with grout cement and providing Aluminum strip for earthing of equipment (25 x 3mm thick).

2. Erection of tanks / Pressure vessels:

Details of tanks to be erected:

Sl. No	Description	Capacity/ Size	MAWP bar	Qty, Nos
1	Air Receiver	5000 Liters	10	1

- If any of the equipment gets damaged during erection, the cost of rectification / replacement shall be recovered from the contractor.
- The alignments, slopes and elevations of receivers are as per purchaser's requirement.
- The contractor has to provide the details of the foundations/pedestals required. Wherever foundations / pedestals could not be provided, the supplier has to provide the required pedestals to the department.
- After erection of the equipment the supplier has to grout the equipment using grout cement.
- Air Receiver shall be earthed through Aluminum conductors of size 25mm (width) X 3mm (thick) as required at site. Approximate length of strip required 200m.

General conditions:

Transportation & Material Handling:

The necessary items for erection of equipment like wood logs, temporary structures, riggers, tools and tackles, wire ropes, D-shackles, cranes are in the scope of supplier. However, department may provide the material handling support on chargeable basis subject to availability. The approximate dept. rates at present are:

Sl. No.	Material Handling systems	Rates per hour (Approx.)
1	130t Mobile crane	13385
2	TIL Mobile crane	2400
3	10t Hydra	1310
4	16t / 10t Fork lift	1400
5	5t Fork lift	970
6	3t Fork lift	820
7	49t Hauler (HIPPO/AMW)	1140
8	Tractor	810
9	10t / 30t Flat bed trailer	590
10	4t Flat bed trailer	580

Note: Support subject to availability

The Transport vehicles required for movement of contract personnel from / to work site including internal movement within site is in the scope of contractor only.

Section – C
Technical Specifications
For Supply of items and quantity

SUPPLY OF MATERIAL UNDER CONTRACTOR'S SCOPE:

Specification for scope of supply: Since the scope of work includes supply of items, it is to be noted that the items to be used shall be of the prescribed make/brand(s) only. The brief specifications for each of the supply items is available in the corresponding sections as indicated.

Details of Specifications of supply items:

Table-A

Sl. No.	Description of the item to be supplied	Specifications as per chapter No.
1	SS Air receiver	Chapter - 1
2.	Breathing air purifier	Chapter - 2
3.	Stainless steel ball valves including spare kit	Chapter -3
4.	Filter cum pressure regulators	Chapter -4
5.	Filters	Chapter -5
6.	Gauge shut off valves	Chapter -6
7.	Quick release couplings with coupler and adapter	Chapter -7
7	Eye/face wash showers	Chapter -8
8	MS Structural	Chapter -9
9	Paints primer and Final coat paints	Chapter -10
10	Specifications for miscellaneous items like SS fasteners, SS U-clamps, SS-spiral wound gaskets etc., required for erection of SS pipe lines.	Chapter -11
11	Specifications for Industrial type water filter for Eye wash/Emergency showers.	Chapter -12

DESIGN,FABRICATION, INSPECTION, TESTING AND SUPPLY OF STAINLESS STEEL COMPRESSED AIR RECEIVER

PART - I Technical specification for Stainless steel Air Receivers.

The stainless steel Air receivers are meant for storing Compressed air, meant for Breathing air requirements. The detailed specifications are given in the articles described below and drawings enclosed.

- Over all dimensions and internal details shall be as per the drawings enclosed.
Drg. No. SS/AIR RECEIVER /01.
- The supplier has to design the vessel as per ASME SEC.VIII-DIV-1 latest edition.

1.0 SCOPE OF WORK

Design, Supply of Materials, Fabrication, Inspection, testing and Supply of Air receivers to SDSC, SHAR as per the details given below:

1.1 Design Parameters for GN2 RECEIVER:

i. **Type:** Vertical, cylindrical with 2:1 Ellipsoidal dished ends. 5m³ - 1 Nos.

ii. **Service:**

- a) Medium : Compressed Air
- b) Operating Pressure : 15 bar.
- c) Design pressure : 20 bar.
- d) Operating Temperature : 50 Deg .C.

iii. **Design standard:** ASME SEC.VIII-DIV-1, Latest edition up to year 2004 (up to march).

iv. **Testing:**

- a) Hydro test Pressure : As per code.
- b) Pneumatic Leak Test : 15 bar

v. **Fabrication Process:**

- a. Welding 100% by TIG with pure argon purging.
- b. Full Radiography of Butt joints.
- c. Solution annealing of dished ends.
- d. Total vessel stress relieving after fabrication.
- e. Pickling & Passivation of internal and external surfaces as per approved procedure.

f. **Approval: Approval by Purchaser/TPI for**

- Design calculations and fabrication drawing prior to commencement of work.
- Dispatch document prior to dispatch.

The Supplier shall design the Air receivers and prepare detailed Fabrication Drawings, the Design calculations and Drawings shall be sent to the Purchaser and TPI for approval. **Fabrication shall be taken up only after final approval from the third party/ purchaser.**

vi. Material of Construction: SA 240 Gr 304L The fabrication shall be carried out using tested and qualified materials only.

- All raw materials shall be new and properly identified and stamped by TPIA after review of original Mill test Reports.
- Plates shall be procured with suitable sizes to minimize weldment and preferably with 100% UT done at plate manufacturer site under TPIA.

vii. Nozzles:

- a) All the nozzles pipes shall be of seamless type and a minimum schedule of 160S to be provided to avoid stiffeners, which is permissible as per design code. Bending of nozzles/pipes is not acceptable. Schedule shall be as per drawings.
- b) The nozzles shall be provided on to the receiver as shown in the drawing. All the nozzle flanges are WNRF (serrated face) of SS forged quality & shall conform to ANSI B 16.5.
- c) All the nozzles shall be provided with blind flanges as per ANSI B 16.5 with necessary SS studs & nuts and SS spiral wound gaskets.
- d) Nozzles pipes, flanges and fittings etc., to be procured from reputed manufacturers only and shall be solution annealed and tested for micro structure examination one sample for Heat /lot.

viii. Earth Boss: Two numbers of **earth boss** shall be provided on the supports.

ix. Name Plate: Tank should have a **name plate permanently fixed on support.**

x. Lifting lugs shall be provided for each tank.

Note: Name plate **shall not be** welded to the shell or dish. This is mainly to minimise **welding** on the pressure parts.

xii. Accessories required: Foundation bolts & Nuts of suitable size (Material: SS).

xiii. Supporting Legs: Shall be design as per **IS: 2825** and minimum number of supports as shown in the drawing.

xiv. Third Party Inspection (TPIA): The Air receivers shall be fabricated under the inspection of Third Party **DNV/LLOYDS.**

xv. QAP is enclosed as **Annexure-I** for reference. However, detailed quality assurance plan to be prepared prior to fabrication and testing and shall be submitted to the Purchaser for approval. During the course of fabrication, different stages of inspection are to be identified. At every stage, clearance has to be obtained.

xvi. During course of fabrication, different stages of inspection are to be carried out. At every stage clearance has to be obtained

1.2 Design pressures, Tank capacities, shell and Dome Thickness & Allowances and schedule of quantity: Service: GN₂.

S1. No.	Capacity m ³ (Approx.)	Design Pressure, bar	Design Temperature (°C)	Corrosion Allowance	Surface treatment allowance	(inclusive of Allowances)		Qty. (Nos.)
						Shell Thick ness	End Dome Thk.	
1	5 m ³	20	70	3mm	1mm	18 mm*	MIN : 18 mm* NOM : 20 mm*	1

Note:

1. Each end dome shall be made out of Max. two number of joints only.
2. *If the design calls for lower thickness than minimum thickness specified above, the thickness specified under 1.2 shall be provided. But, if higher thickness is called for by design than the minimum thickness specified above, higher thickness shall be provided.
3. For Design of pressure parts of tank like shell & dished ends etc. Lower allowable stress shall only be considered. The value selected at 60°C shall be indicated in design calculations.

1.3 WELDING

- i) **100% by GTAW process**, shall be adopted with high purity Argon gas purging and shielding, right from root to final passes for all butt welds (Long seams, 'C' seams, nozzles, pipe to flange joints) and all internal and external welds including fillets welds. **SMAW is not acceptable.**
- ii) Welding consumables (filler wire) shall be used as per AWS classification or ER 308L
- iii) It is recommended to minimize number of cir. seam weld joints on the cylindrical portion of the tank. The shell of tanks shall be fabricated with standard width plates.
- iv) The welding procedure qualification and welder performance qualification shall be carried out. Only qualified welders shall be employed for the fabrication of tank.

1.4 RADIOGRAPHY:

- i) **100% radiography and DP test are to be carried out on all Butt welded joints**, including nozzle pipe to WNRF flange joints. All welds other than butt welds shall be DP tested.
- ii) **Radiography** has to be carried out with X-ray machine with a **sensitivity of 2-2T** as per ASTM E-94.
- iii) **Tungsten inclusion and porosity in the weldments are to be limited to the extent of nil. However, as this condition is difficult to achieve and our acceptance criteria for the same** is as given below.
 - a). **Acceptable criteria**
 - i. Maximum size of acceptable rounded indications:1mm
 - ii. Maximum size of non-relevant indications:0.5mm
 - iii. Distance between the rounded indications:50mm
 - iv. The length of an acceptable cluster shall not exceed 10mm.
 - b). Since this vessel is to be used in critical applications to monitor the condition of vessel periodically, the defects of Tungsten inclusion and porosity which are falling within acceptable criteria shall be mapped with reference to the location, size and record shall be submitted to the purchaser during inspection.
- iv). The dye used for Dye-penetrant test shall not have chloride more than 50ppm.
- v). Any re-work / repair have to be carried out as specified in ASME boiler and Pressure vessel code with the approval of Third party/purchaser.

1.5 HEAT TREATMENT:

i. Solution Annealing:

Dish End domes shall be cold formed by spinning or point press method. After cold forming, solution annealing shall be done to relieve stresses caused due to cold working as per code.

Solution annealing shall be as per the following cycle.

- a. Loading temperature : 400°C (Max.)
- b. Rate of heating : 250°C/Hr (Max.)
- c. Soaking temp : 1040-1060°C
- d. Soaking time : 30 (Min.)
- e. Quenching in water to bring down temperature to 350°C within 3 minutes (Maximum).
- f. The final hardness shall be checked and ensured to be below 201 BHN.

ii. Stress relieving:

The total fabricated tank (Full equipment) including support legs has to be stress relieved at 420+ 10 Deg °C as per standard practice (this operation shall be carried out prior to Hydro static test).

The detailed stress relieving cycle is as given below:

- a. Loading temperature : 300°C (Max.)
- b. Rate of heating : 100°C/Hr ±20 °C
- c. Soaking temperature : 420°C/Hr±10 °C
- d. Soaking time (Min.) : 2 hrs
- e. Rate of cooling (Min.) : 100°C/Hr
- f. Unloading temperature : 300°C (Vessel to be air cooled inside the furnace by opening furnace doors). Vessel to be air cooled at atmospheric condition after unloading.

iii. Solution annealing of domes and stress relieving of total tank preferably carried out in an electric furnace. If oil furnace is used, the fuel shall be of lower Sulphur content oil like high speed diesel. Micro structure examination testing shall be carried out for the dome after heat treatment by way of test coupons.

iv. Precaution should be taken to avoid direct impingement of carbon smoke on to metal surface by suitable protection method like application of thin layer of plaster coat/fire clay prior to loading into furnace, Suitable digital photos to be taken in presence of TPIA prior & after SR and signed images sent along with PMF (Production Master File).

v. The Furnace shall be calibrated prior to taking up stress relieving of the vessels. The detail of the furnace proposed for stress relieving like clear dimensions, type, No. of nozzles, type of fuel used location and number of thermo couples proposed for temperatures measurements shall be submitted and approval of the purchaser shall be obtained prior to performing the stress relieving of entire vessel.

1.6 TESTING:

i) Testing of materials:

Materials of construction shall be as given in Art No. 1.7 Bill of Materials **Table:**

1. All materials used shall be tested as per Code in the Reputed Govt. approved testing labs before fabrication. All the plates proposed to be used for fabrication of Air receiver, shall be subjected to mechanical, chemical and IGC tests as per A-262 Practice-E in spite of availability of Mill test certificates.

The plates used for construction of Air receiver shall also be ensured free from any lamination and manufacturing defects by 100% ultrasonic testing as per Practice ASTM A-435.

Ferrite number in weldment shall be measured by testing and this shall be within the specified limit of 3% to 12%. Test certificates shall be furnished to purchaser for approval.

Ultrasonic test qualified (ASTM E213) Nozzle pipes shall be only used for fabrication.

ii) **Hydraulic Pressure Test:**

The Air receiver shall be tested as per ASME Sec VIII, Div-1, Clean potable water/DM Water with chloride content of less than 25 PPM, shall be used for testing. The test pressure shall be as per design code.

iii) **Before Hydro test all the surfaces of the tank shall be mechanically cleaned.**

iv) Heat Treatment of entire vessel shall be carried out prior to Hydro test. After the final hydro test the vessel has to be degreased, pickled and passivated & painted **as per the procedure given in Annexure-II**. The cleaning, pickling and passivation is to be carried out for both inside and outside surfaces of the vessel by filling/swabbing method.

v) **Pneumatic Leak Test**

After Hydro test, the tank shall be tested at 15.0 bar (g) using dry Air with dew point of minus 40 Deg. C or better and leak check with soap solution at all welds and flanged joints.

1.7 Material of construction of tanks shall be strictly as given below.

MATERIAL SPECIFICATION

Table-1

Sl. No.	Components	Material of construction
1.	Shell and Dished ends	SA 240 GR 304L
2.	Nozzle pipes	A 312 TP 304L (Seamless)
3.	Nozzle flanges	A 182F 304L
4.	Supports and all RF pads	SA 240 GR 304L
5.	Studs and nuts	A193GrB8M/A 194 Gr.8M
6.	Gaskets	SS 304 Spiral wound with Teflon sand witched with SS 304 inner and outer rings.
7.	Blind flanges	A 182 F 304
8.	All internals	SS 304L
9.	Name plate / bracket	SS 304 L
10.	Pad plate	SA 240 GR 304L
11.	Lifting Lugs	SA 240 GR 304L
12.	Material Wherever not mentioned	SS 304L
13.	Foundation Bolts & Nuts	SS 304L
14	Wherever not mentioned	SS 304L

PART-II GENERAL CONDITIONS

1.0 Monitoring

- i) The progress of work during the course of fabrication will be monitored by the purchaser within 15 days of receipt of the order, the fabricator should prepare a detailed PERT chart showing all mile stone activities of fabrication, testing, chemical cleaning etc., and submit to the Purchaser for approval. The approved PERT shall be modified only with the concurrence of the Purchaser.
- ii) Submission of drawings and design calculation to the purchaser for approval prior to taking up fabrication.
- iii) Supplier shall prepare detailed design calculations and fabrication drawings and submit to (Purchaser) and third party inspection agency within one month of placing the order.
- iv) The Bidder has to engage **DNV/LLOYDS** as Third party inspection agency.

v) Production Master File

Three copies of production master files shall be supplied by the supplier along with the consignment. Each production master file should contain the following.

- Brief introduction.
- Purchaser Order.
- Approved design and fabrication drawings.
- As-built drawing approved by TPI
- Design Calculations and analysis data, if any
- Inspection certificates issued by TPI & Purchaser representative.
- Bill of materials with history and tracing reference.
- Materials Test Certificates.
- WPS, WPQ, PQR and Welding Layouts.
- Inspection reports
 - 1.Ultrasonic test reports of plates
 - 2.Fit up history and DP testing reports of all weld joints
 - 3.Dimensional Report.
 - 4.Chart & Test reports for stress relieving.
 - 5. Hydrostatic pressure test
 - 6. Pneumatic pressure test
 - 7. Picking &Passivation
 - 8.Painting certificate
 - 9. Any other stage wise inspection reports of Third party /Purchaser representative.
- Name plate details.
- Equipment dispatch clearance certificate issued by TPI& purchaser representative.

All the above reports / test results shall be bound neatly.

- vi) One set of **soft copy** of as-built drawings shall be supplied to the Purchaser.
- vii) All radiography films **Soft Copy** pertaining to the tanks shall be supplied to the Purchaser.

SCOPE OF INSPECTION: AS PER QAP the vessel should be fabricated under the inspection of Third party/Purchaser representative as per QAP.

QUALITY ASSURANCE PLAN (QAP)

Sl. No.	Characteristics / type of check	Ref. Document	Method of check	Quantum of check		
				Manufacturer QC	Third party	Purchaser
1.a	Identification of material with Mill T/C Including ultrasonic T/C reports	As per PO	Visual	100% H	100% R	R
1.b	Sample selection for each lot/heat number & Witness of physical, chemical and IGC test for plates	As per PO	Visual	100% H	100% R	R
1.c	Witness Ultrasonic testing of plate (*refer in specification)	As per PO	Visual	100% H	100% R	R
1.d	Sample selection for each heat/lot number & Witness of physical, chemical, Micro structure and IGC test for pipes, fittings, flanges & gaskets, etc.	As per PO	Visual	100% H	100% R	R
2	Review of fabrication drawings and Design Calculation	As per PO/ drawing	Material as per design	100% H	100% R	R
3	Review of welding procedure & Qualification	AWS	Review	100% H	100% R	R
4	Checking of root run & final weld by dye Penetrant test (butt welds)	As per PO	Visual	100% W	100% R	R
4.1	Measuring of Ferrite number in all weldments	As per PO	Checking with meter	100% W	100% R	R

Sl. No.	Characteristics / type of check	Ref. Document	Method of check	Quantum of check		
				Manufacturer QC	Third party	Purchaser
5	Marking of nozzle orientation	As per drawing	Location of nozzle	100% W	100% W	R
6	Dye Penetrant test on all fillet welds.	As per PO	Visual	100% W	100% R	R
7	Visual & Dimensional inspection	As per approved drawing	Dimension	100% W	100% W	R
8	Shell rolling, long seam & Cir. Seam fit up	As per std	Visual	100% W	100% W	R
10	Circularity of shells after rolling	As per std	Visual	100% W	100% W	R
11	Forming of dished ends & solution annealing. Testing micro structure examination by way of test coupons	As per std	Visual	100% W	100% W/R	R
12	Fit up of nozzles and supports and welding	As per std	Visual	100% W	100% W	R
13	Evaluation of radiography films of all butt welds	As per PO	Film evaluation	100% W	100% R	R
14	Stress relieving of total fabricated tank	As per PO	Graph	100% W	100% W	R
15	Mechanical cleaning and buffing	As per PO	Visual	100% W	100% R	W/R
16	Hydraulic test as per design code	As per PO	Pressure hold method	100% W	100% W	W
17	Pneumatic leak test @ 10.0bar	As per PO	Pressure hold method and surface check with soap solution	100% W	100% W	W

Sl. No.	Characteristics / type of check	Ref. Document	Method of check	Quantum of check		
				Manufacturer QC	Third party	Purchaser
18	Picking, passivation	As per PO	Visual	100% W	100% R	R
19	Filling with dry nitrogen at 0.5 bar (g)	As per PO	Gauge reading	100% W	R	R
20	Stamping of the vessel and issue of certificates	As per PO	Visual	100% R	100% W	---
21	Verification of Material test certificates	As per PO	Review	100% R	100% R	R
22	Production master file	As per PO	Document	100% R	R	R
23	Issue of Inspection release note(IRN)				Yes to be given by TPI	
24	Painting of all external un-machined surfaces	As per PO	Measurement SDFT with meter and visual.	100% H	100% R	R

Legend: **R** – Review, **W** – Witness, **H** – Hold.

Note:

1. The Purchaser has rights to participate in the inspection at any stage of fabrication & the bidder shall intimate the works progress periodically.
2. 100% Evaluation of radiography films shall be carried out by the third party inspection agency.

PROCEDURE FOR PICKLING, PASSIVATION & PAINTING

i) Mechanical Cleaning:

All metallic surfaces inside and outside having scales and foreign materials and all welded surfaces have to be cleaned. This can be done by scrubbing with metallic brush (Stainless Steel) followed by buffing to get a polished surface.

The loose scales and powders obtained from the above process can be cleaned by blowing, sucking or washing with water. Mechanical cleaning and buffing shall be carried out after stress relieving ,but before hydro test .

ii) Degreasing, pickling and passivation shall be carried out as per the following method for the tank after hydro testing.

- a) **Degreasing :**Degreasing has to be done by soaking with hot detergent solution of Lissapol at 60 Deg. to 70 Deg. C for at least 2 hours till satisfaction.
- b) **Pickling and Passivation for inner surface: (Filling Method) for inner surface and Swabbing method using Barium Sulphate as an acid carrier for outer surfaces of the tank).**

i. Pickling for inner surface:

Pickling is to be carried out with solution containing Nitric acid 15% by volume and Hydro-fluoric acid (HF) 2% by volume, balance DM water.

Temperature : Ambient

Duration : 1 to 2 hours

Rinsing :

Thorough DM water rinsing has to be carried out until all traces of acid are removed from the surface.

Passivation:

Passivation is to be carried out with solution of containing Nitric acid 20-25% by volume, balance DM water.

Temperature : Ambient

Duration : 2 hours

Thorough rinsing with DM water is to carried out till P^H of the final rinse water is between 6.5 to 7.5. to minimize staining, surfaces must not be permitted to dry between successive steps of the acid cleaning or passivation and rinsing procedures

The concentration of iron should not exceed 5% by weight in case of pickling solution and 2% by weight in case of passivation.

c) Pickling for outer surface: Swabbing method

The pickling and passivation is done with barium sulphate as carrier (chloride levels 25 ppm) in the form of paste.

For each of pickling and passivation operations, the paste has to be applied on the surface and has to be kept for at least two hours. Paste has to be removed with waste cotton in each operation and finally the surface has to be rinsed with DM water.

i) **Checking :** All the relevant tests shall be carried out to ensure proper pickling and passivation as per ASTM A 380.

ii) **Drying :** The drying is done to remove water and this is done as given below:

Passing dry Nitrogen /Air having dew point less than -40 Deg. C and free from oil and grease (less than 10 PPM) at 60 Deg. C till the moisture level at the exit comes to the inlet concentration value.

iii) **Sealing:** After drying, the tank should be sealed so that ambient moisture never enters inside. The tank is to be pressurized to 0.5 bar with dry Nitrogen Gas at -40 Deg. C dew point or better.

iv) **Painting:** After surface preparation, all external unmachined surfaces shall be provided with one coat of high built epoxy primer 120 to 130 microns DFT. Preferable make: Berger/Bombay paints /CDC/GP

Chapter- 2

SPECIFICATIONS FOR BREATHING AIR PURIFIER

1.	Condition of air at the out let of purifier	:	To meet BS4275/EN12021/ OSHA norms
2.	Contaminants to be removed from air handled	:	Gross Particulate, Liquids, Oil vapour, Water vapour, CO2 & CO
3.	Qty.	:	2 Nos.
4.	Type	:	On line fitted, low-pressure operation, 6-stage filter
5.	Flow pattern	:	Horizontal
6.	Normal operating pressure	:	10 bar
7.	Maximum operating pressure	:	15 bar
8.	End connection	:	Inlet: $\frac{1}{2}$ " & $\frac{3}{4}$ " outlet
9.	Flow /Capacity	:	53 cfm at 7 bar(g)
10.	Manufacturer	:	Parker Hannifin (Dominick Hunter)
11.	Model No	:	BA-DME-30
12.	Power supply	:	220/240 V AC, 50 HZ single phase
13.	Material of construction:	:	
	Filter body	:	Die cast Aluminum
	Filter elements	:	Manufacturer's standard

Note: The following documents shall be sent along with dispatch (3 Copies):

- I. Test report of BAP.
- II. Operation and maintenance manual including spares parts list.

Chapter - 3
Specifications for Supply of SS Ball valves:

Item Description	Detailed Specification for	
	S.S Flanged type ball valves	
Type	Full bore, Two piece Ball valve	
End connections	RF Flanged confirming to 150#	ANSI B16.5,
Class rating	150#	
Face to face dimensions	As per ANSI B 16.10	
Mode of operation	Hand Lever	
Design code	BS5351/ISO 17292	
Antistatic Device	To be provided	
Blowout proof stem	To be provided	
Fire safe	BS 6755 Part -11 / API 607/ BS-EN-ISO 12266	
Leakage Class	As per ANSI B16.104 Class VI/ FCI 70.2 -100% Bubble Tight shut off/Zero leak	
Testing code	BS 6755 Part -1 /API 598/ BS-EN-ISO12266 Part-1/ISO 5208	
Manufacturer	Microfinish/Virgo/Flowserve (Audco)/Argus	
Material of Construction		
Body and Ball Material	CF8M / SS316	
Seat Material	PTFE /RPTFE	
Stem , Stem bush, Stem nuts, Spacer Material	SS 316	
Lever material	SS304	
Body seal/Gasket	Graphite/PTFE/RPTFE	
Stem seal: Stem packing/0-ring	Graphite/PTFE/RPTFE	
Bolting / Nuts	A 193 Gr. B8M/A 194 Gr 8M	
Valve Castings	Radiography Quality	
Castings/ forgings	Solution Annealed	

SCHEDULE FOR SS MANUAL BALL VALVES

Sl. No.	Description	Qty.	Units
1	Supply of Full Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size: 15NB with PTFE encapsulated Viton/Teflon/Graphoil stem seals as per specifications.	40	Nos.
2	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 15NB	5	sets
3	Supply of Full Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size: 20NB with PTFE encapsulated Viton/Teflon/Graphoil stem seals as per specifications.	40	Nos.
4	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 20NB	5	sets
5	Supply of Full Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size: 25NB with PTFE encapsulated Viton/Teflon/Graphoil stem seals as per specifications.	8	Nos.
6	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 25NB	2	sets
7	Supply of Full Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:40 NB with PTFE encapsulated Viton/Teflon/Graphoil stem seals as per specifications.	8	Nos.
8	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 40NB	2	sets
9	Supply of Full Bore Ball valve, Stainless steel Body to ASTM A 351 Gr CF 8M, Ball: SS316/ ASTM A 351 Gr CF 8M, Seats PTFE and graphite seal, Fire safe and anti-static design, Flanged ends as per ANSI B16.5, Class :150, Size:50 NB with PTFE encapsulated Viton/Teflon/Graphoil stem seals as per specifications.	4	Nos.
10	Supply of spare kit for above Full-Bore flanged Ball valve, Class :150, Size: 50NB	2	sets

Specifications for Supply of Air Filter cum Pressure regulator

Scope: Supply of filter cum pressure regulators and spares as per the details given below.

- Type:**
- a) **Regulator :** Self contained, spring loaded, Metal bowl
 - b) **Filter :** With metal bowl & sintered bronze element and Manual drain.
 - c) **Service medium:** Compressed air.

Sl.No.	Description of items (s) to be ordered	Qty. Nos.
1.	<p>Size: 1/2" (15NB) NPT (F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 1/2" Main port NPT, Gauge port 1/8" BSPT Filter element: 25 micron sintered bronze Maximum inlet pressure: 17.5 Kg/cm² (at 80°C ambient) Regulated secondary pressure range: 1 - 10 Kg/cm². Pressure gauge: with a dial of 52mm OD Manufacturer: SHAVO, Filter cum pressure regulator combination unit VAYU 60 Series.</p>	10
2	<p>Size: 3/4" (20NB) NPT(F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 3/4" Main port NPT, Gauge port 1/8" BSPT Filter element: 25 micron sintered bronze Maximum inlet pressure: 17.5 Kg/cm² (at 80°C ambient) Regulated secondary pressure range: 1 - 10 Kg/cm². Pressure gauge: with a dial of 52mm OD Manufacturer: SHAVO, Filter cum pressure regulator combination unit. VAYU 60 Series.</p>	25
3	<p>Size: 1" (25NB) NPT (F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 1" Main port NPT, Gauge port 1/8" BSPT Filter element: 25 micron sintered bronze Maximum inlet pressure: 17.5 Kg/cm² (at 80°C ambient) Regulated secondary pressure range: 1 - 10 Kg/cm². Pressure gauge: with a dial of 52mm OD Manufacturer: SHAVO, Filter cum pressure regulator combination unit. VAYU 70 Series</p>	5

Note:

- 1.Predelivery inspection by purchaser is required. Party shall intimate readiness of items one week in advance to plan for inspection.
- 2.Test certificates shall be provided also with supply.

Chapter -5

Specifications for Supply of Air Filters

Scope: Supply of filter cum pressure regulators and spares as per the details given below.

- Type:** a) **Filter:** With metal bowl & sintered bronze element and Manual drain.
 b) **Service medium:** Compressed air.

Sl.No.	Description of items (s) to be ordered	Qty. Nos.
1.	Size: 1/2" NPT (F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 1/2" Main port NPT, Gauge port 1/8" BSPT Size: 1/2" NPT (F) Filter element: 25/40 micron sintered bronze Maximum inlet pressure: 17.5 Kg/cm ² (at 80°C ambient) Manufacturer: SHAVO FILTER VAYU 60 SERIES	40
2	Size: 3/4" NPT (F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 3/4" Main port NPT, Size: 3/4" NPT (F) Maximum inlet pressure: 17.5 Kg/cm ² (at 80°C ambient) Pressure gauge: with a dial of 52mm OD Manufacturer: SHAVO FILTER VAYU 60 SERIES	5
3	Size: 1" NPT (F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 1" Main port NPT Filter element: 25/40 micron sintered bronze Maximum inlet pressure: 17.5 Kg/cm ² (at 80°C ambient) Manufacturer: SHAVO FILTER VAYU 70 SERIES	2
4	Size: 1 1/2" (40NB) NPT (F) Bowl: Metal bowl (Al. Alloy die cast) with manual drain &sight glass Pressure Adjustment: KNOB TYPE (NITRILE ELASTOMERS) End Connection: 1 1/2" (40NB) Main port NPT Filter element: 25/40 micron sintered bronze Maximum inlet pressure: 17.5 Kg/cm ² (at 80°C ambient) Manufacturer: SHAVO FILTER VAYU 70 SERIES	10

Note:

1. Pre-delivery inspection by purchaser is required. Party shall intimate readiness of items one week in advance to plan for inspection.
2. Test certificates shall be provided also with supply.

Chapter-6

Specifications for Supply of pressure gauge shut off valves

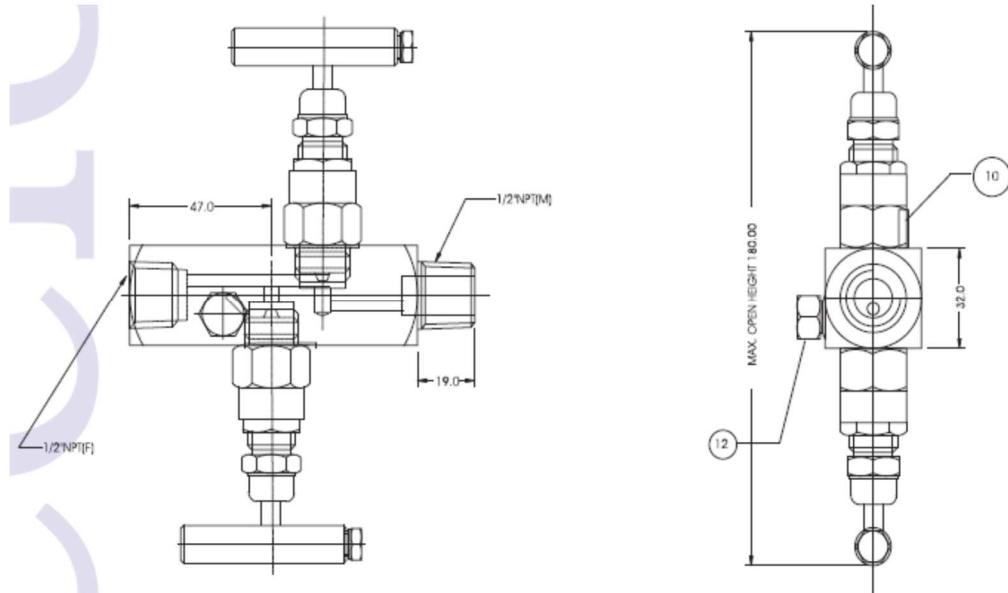
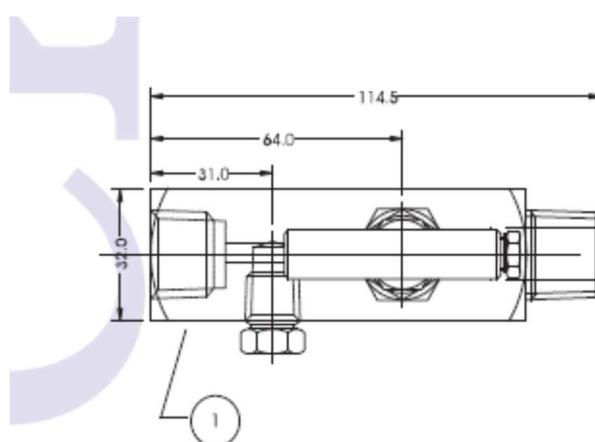
SL.NO.	DESCRIPTION	SPECIFICATION	
1.	Gauge Shut off Valve type	Valve type - I	Valve type - I
2.	Qty.	30 Nos.	30 Nos.
3.	Ref.drg.no.	GSV Type - I	GSV Type - II
4.	Inlet end connection	$\frac{1}{2}$ " NPT Male with standard depth	$\frac{1}{2}$ " NPT Female with standard depth
5.	Outlet end connection	$\frac{1}{2}$ " NPT female with standard depth	$\frac{1}{2}$ " NPT Female with standard depth
6.	Vent port	$\frac{1}{4}$ " NPT female plugged with SS plug.	
7	Material of construction		
7.1	Body and trim	SS316	
7.2	Bonnet	SS316	
7.3	Packing	KEL-F	
7.4	Seals	Viton	
8.	Max operating pressure	400 bar	
9.	Max operating temperature	50°C	
10.	Medium	Air/Nitrogen	
11.	Handle	Wheel type / T-type	
12.	Manufacturer	Excel hydro-pneumatics/GEM pressure systems/GEM Engg. Industries/ Swage lok/Parker / IMI Norgren Herion/Tescom	

General Conditions

1. All the valves shall be supplied with PVC/HDPE plugs / caps for inlet and outlet connections to avoid damage to threaded portions during transit.
2. Valves shall be supplied with cross sectional drawings and operation and maintenance manuals.
3. Valves shall be supplied with tags indication size, MOC, operating pressure, SL.NO./Heat no. and year of manufacture.
4. One no. For each type of valve shall be tested for the material chemical analysis and shall be supplied with the test certificates.
5. Test certificates for hydro and pneumatic tests carried out as per code shall be supplied along with material.
6. Dimensional verification for threaded connections shall be carried out.
7. Supplier shall confirm all the conditions of enquiry.
8. All the valves shall be suitably packed with standard industrial packing to avoid damage during transit.

NOTE:

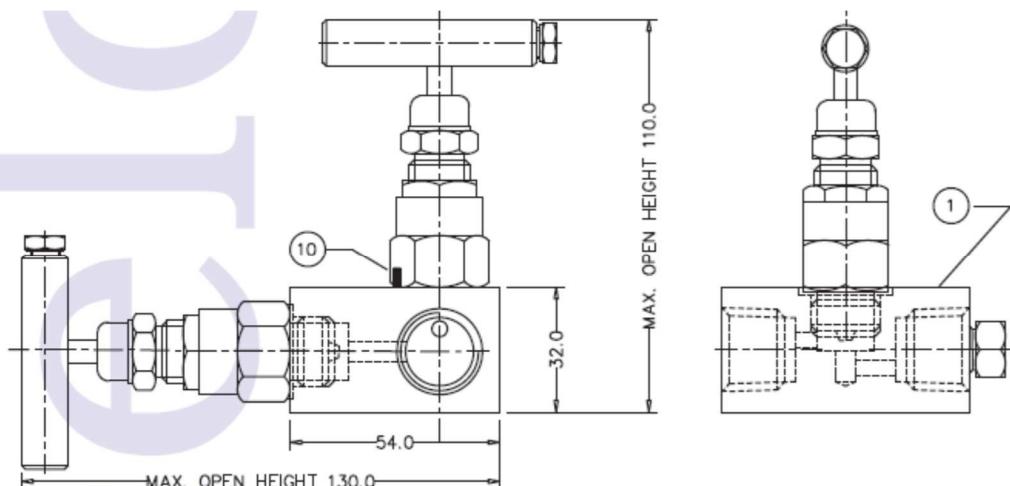
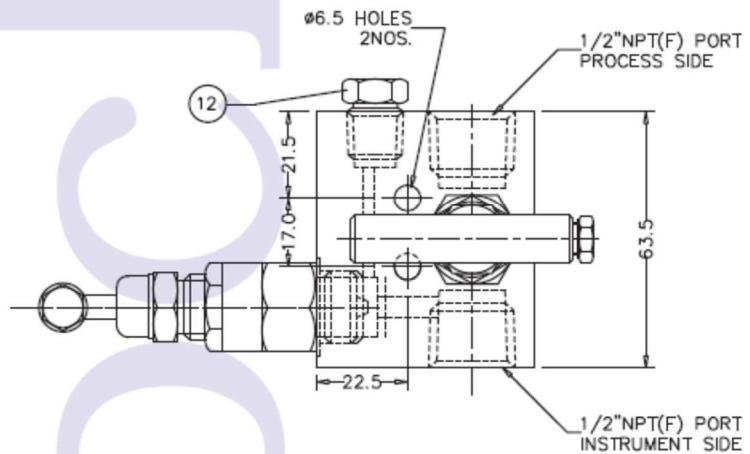
1. The supplier shall supply GA, sectional drawings for purchaser's approval before commencement of production. Supplier shall commence production of total quantity only after getting approval from the purchaser.
2. Relevant catalogues / drawings for each type of valve shall be supplied along with the material.



DRG.NO. GSV Type - I

GAUGE SHUT OFF VALVE: TYPE -I

Inlet end connection	1/2" NPT Male with standard depth
Outlet end connection	1/2" NPT female with standard depth
Qty. Nos.	30Nos.

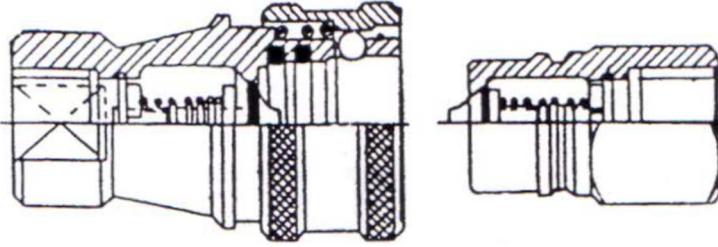
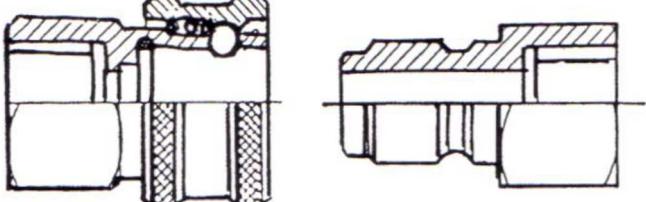


DRG.NO. GSV Type – II

GAUGE SHUT OFF VALVE: TYPE -II

Inlet end connection	1/2" NPT Female with standard depth
Outlet end connection	1/2" NPT Female with standard depth
Qty. Nos.	30Nos.

Specifications for Quick release coupling with coupler and adapter

SL.NO.	DESCRIPTION	QTY. NOS.
1.	<p>Supply of Double Shut off Quick release coupling with coupler (Part-A) and adapter (Part-B) as per following details.</p>  <p style="text-align: center;">PART-A PART-B</p>	
1.1	Coupler (Part-A) Size:1/2", One end to suit adaptor and other end 1/2"NPT(F) with dust plugs.	30
1.2	Adapter (Part-B) Size:1/2", One end to suit coupler and other end 1/2"NPT(F) with dust plugs.	20
2	<p>Straight through type quick release coupling, Coupler (Part-A) and adaptor (Part-B) both without Non return valves as per as per following details.</p>  <p style="text-align: center;">PART-C PART-D</p>	
2.1	Coupler (Part-c) Size:3/4", One end to suit adaptor and other end 3/4"NPT(F) with dust plugs.	40
2.2	Adapter (Part-D) Size:3/4", One end to suit coupler and other end 3/4"NPT(F) with dust plugs.	20
SL.NO.	DESCRIPTION	SPECIFICATIONS
1	Material of construction	
1.1	Body and internals (Spring & Balls) etc.,	SS304/316
1.2	Seals	Viton
3	Max operating pressure	16 bar
4	Max operating temperature	50°C
5	Medium	Air
6	Hydrotest test pressure: 1.5 times of Max. operating pressure.	
7	Manufacturer: INSAP/Madras Hydraulics/Swagelok/Paker	

General Conditions:

1. General Arrangement Drawings with dimensions shall be sent.
2. Relevant Test Reports for material shall be furnished along with dispatch documents.

Scope of Inspection

- a) Verification of Test reports for physical and chemical properties of material.
Hydro and pneumatic test as per relevant codes.

Specification for Eye/Face wash fountain Cum Drench shower combination unit:

Material of construction : Stainless steel
Operating pressure : 2 Kg/cm²
Hydrostatic test pressure : 8 Kg/ cm²

Operation:

- Eye/face wash fountain: Push plate lever & Pedal operated.
- Drench Shower: Pull rod operated.

Features:

- Impact/ corrosion proof Twin cushion flow atomizers with pop-off dust covers.
- Automatic flow compensators
- Shower head with perforated spreader
- Receptor bowl and Atomizer unit
- Stainless steel Ball valves for shower and fountain
- Both units (Eye/face wash fountain & Drench Shower) to operate independently.
- **Approvals: UL & IS: 10592**
- Shall be supplied along with foundation bolts.

Sl. No.	Description	Qty.	Units
1	Supply of Eye/face wash fountain & pull-rod operated drench shower as per IS 10592 in SS 304 with SS twin cushion flow atomizers. (Manufacturer: Unicare)	8	Nos.

General conditions of supply:

The items to be supplied shall confirm to IS 2062 and IS 1852.

1. The materials shall be free from scratches, pin holes, corrosive layer, material defects, etc. The latest stock items shall be supplied.
2. The commercial leading brands like TISCO, SAIL, VIZAG steel only to be supplied.
3. The items shall be inspected at supplier's premises before despatch. Hence supplier has to inform us for pre-delivery inspection.
4. The confirmatory material test certificates shall be provided along with the materials/at the time of inspection.

Manufacturer: TATA/TISCO/SAIL/JINDAL/VIZAG

Sl. No.	Description	Qty
1.	MS structural fabrication works: Fabrication of (Arc welding) of platforms, pipe supports & hand rails and anchoring works.	3 tons

A. HIGH BUILT EPOXY COATINGS (Primer):

This primer paint shall confirm the following requirements:

- High performance general maintenance coating for new or old MS material.
- Self-priming topcoat over most existing coatings.
- Can be over coated with wide range of topcoats.
- 125 microns or more in a single coat.
- Two component, catalyst cured.
- Minimum theoretical coverage rate of 32 Sq.M/ Litre at 25 Microns DFT.
- Volume solid (Volume) 80%.
- Mixing ratio 3:1.

B. ALIPHATICPOLYURETHANE PAINTS (Finish):

These finish paints shall confirm to the following requirements:

- Catalyst isocynade.
- High gloss finishes.
- Gloss & color retentive upon prolonged exterior exposure.
- Suitable as an exterior finish coat over an inorganic primer and inhibitive polyamide epoxy intermediate coat.
- Hard, tough, flexible & abrasion resistance.
- Minimum theoretical coverage rate of 17 Sq.M / Litre at 25 Micron DFT.
- Mixing ratio 3:1.
- Paint application method is by brush.
- Color shade shall be as per IS-05.

Quantity : Suitable quantity required for painting of the erected pipe lines, flow components & MS Pipe supports etc., The supplier to consider the cost of the paints as per details given in Table No. 1, Sl.No.3. & Sl. No.4.

General conditions:

- The primer & finish coat part life / self-life shall be 12 months.
- Ordering quantity variation shall be \pm 4 liters.
- Scope of inspection:
 - Viscosity of the paint.
 - Volume solid test
 - Coverage rate of the paint as per the specification.
 - Before dispatch the supplier has to inform for inspection.
 - Manufacturer : Grand Polycot, Asian, Berger, Nerolac

I. SS Studs

Stainless Steel fully threaded studs with two numbers of hexagonal nuts and two numbers of washers (One set consists of 1 No. of stud + 2 Nos. of nuts + 2 Nos. of washers).

1. Studs and nuts shall be confirm as follows:

Studs	:	ASTM A 193 Gr.B8M
Nuts	:	ASTM A 194 Gr.8M
Washers	:	SS 316 (1.5 mm thick up to M12, 2 mm thick up to M16 and 3 mm for larger sizes).

The minimum quantity of SS studs to be supplied.

SL. No.	Stud X Length	Qty. Nos.
1	M12 X 75	300
2	M12 X 90	300
3	M16 X 90	200

Note: Minimum quantity required SS studs for flanged joints of pipe lines and flow components are given in the above table. The supplier to consider the cost of SS studs along with SS piping erection as per details given in Table No. 1, Sl.No.3.

2. The process of manufacture of studs shall be as given below:

- Receipt of rolled rods of required size and quantity.
- Cutting to required lengths.
- Solution Annealing as per standards
- Samples for Chemical, Mechanical and IGC test drawn (To be drawn by purchaser's representative).
- Cylindrical grinding to achieve required dimensions.
- Thread rolling
- Pickling and Passivation followed by thorough washing with DM water.
- Checking with nuts.
- Purchaser's Representative will draw samples for Chemical Test from finished products.

3. All threads shall be made by Thread rolling method only. Threading by machining is not allowed.

4. All Nuts shall be of forged quality, cast nuts will not be acceptable. Nuts shall be tested as per standard specified.

5. Material tests shall be conducted as per code specified. Chemical & physical tests and IGC tests shall be carried out in Government recognized laboratories only. Minimum of one specimen shall be drawn from each heat and each size as per QAP. Testing charges will be paid at actual against documentary proof. All Test Certificates shall be furnished to the purchaser.

6. The pitch of the threads shall be standard.
7. All bolts, nuts and washers shall be pickled by dipping in the acid solution of 20% of Nitric acid, 2% Hydrofluoric acid in balance water for about 2 hours and passivated by dipping in the acid solution of 25% Nitric acid in DM water.

Manufacturers: Venkatewara Industries, Chennai/Mechwell fittings , Ahmedabad/Tec aero devices, Hyderabad/Lee hydraulics, Hyderabad/Dabir, Thane/VK technical works, Hyderabad

QUALITY ASSURANCE PLAN

S. No.	Characteristics/ Type of Check	Ref. Document	Method of Check	Quantum of Check		
				Manufacturer's QC	Department Representative	
Raw material analysis						
1.	Mechanical Testing (Number of Samples : SIX)	ASTM A 193 Gr. B8M	Review of Test Certificates	100% R	Sample Selection & Review of Test Reports	
2.	Chemical Analysis (Number of Samples : SIX)	ASTM A 193 Gr. B8M	Verification of material certificates	100% R		
3.	I.G.C Test (Number of Samples : SIX)	ASTM A262 Practice-E	Review of Test Certificates	W & R		
Note : The supplier has to obtain clearance from purchaser, to commence production based on test reports.						
After manufacturing studs						
4.	Dimensional and Visual Inspection of Studs & Nuts	As per PO	Measurement and Visual Inspection	100% H	10% RN	
Note: The Studs/Nuts are to be packed and sealed in the presence of Purchaser's Representative, after selecting samples for final chemical analysis.						
After physical Inspection of Studs / Nuts						
5.	Chemical Analysis of Nuts (Number of samples: Two)	ASTM A194 Gr.8M	Verification of material certificates	100% H	Sample Selection & Review of Test Reports	
6.	Final Chemical Analysis of SS Studs (Number of Samples : Two)	ASTM A 193 Gr. B8M	Verification of material certificates	100% H	Sample Selection & Review of Test Reports	
Note: Dispatch clearance will be given by Purchaser's Representative after the review of Final Chemical Analysis reports.						
1. The Studs/Nuts are to be dispatched in as assembled condition.						

Legend: R-Review, W- Witness, RN- Randomly, H-Hold

II. Specification for SS U- Clamps

Supply of SS U-clamps (partially threaded) with four Nos. of hexagonal nuts, four Nos. of 1.5 mm thick plain washers and one No. of 2 mm thick shim plate.

1. Material of Construction:

U-Clamps & Nuts	-	Gr ASTM A 193 Gr. B8 SS 304
Washers& shim plate	-	SS 304

The minimum quantity of SS U-Clamps to be supplied.

Sl. No.	Pipe Size	Qty. Nos.
1	15NB	100
2	20NB	100
3	25NB	200
4	40NB	350
5	50NB	800

Note: Minimum quantity of U-Clamps required for clamping the erected pipe lines are given in the above table. The supplier to consider the cost of the U-Clamps along with SS piping erection as per details given in Table No. 1, Sl.No.3.

2. Threads of U-clamps shall be made **by Thread rolling** only without burrs to have a better finish and strength.
3. All the U-clamps and nuts shall be pickled and passivated as per standard procedure **ASTM-A380**. The final finish of items shall be bright finish.
4. Clamps thread ends shall be made as per IS 1368 and thread dimensions shall be as per **IS 4218**

5. TESTING: Chemical and Mechanical analysis:

- After fabrication, U-clamps, nuts, washer and shim plate shall be tested for mechanical and chemical properties (**one number of samples in each size and each heat number of the U-clamp set**) in a Government approved laboratory.
- The sample will be picked up from the inspected lot and it will go for the testing
- Chemical test by spectra analysis -No of samples - 5nos
- Mechanical test – Tensile test -No of samples - 05 nos
- Proof loading test for Nut - No of samples - 05 nos
- Machining charges for Mechanical test- No of samples- 05
- Total testing charges should be quoted in their offer itself.

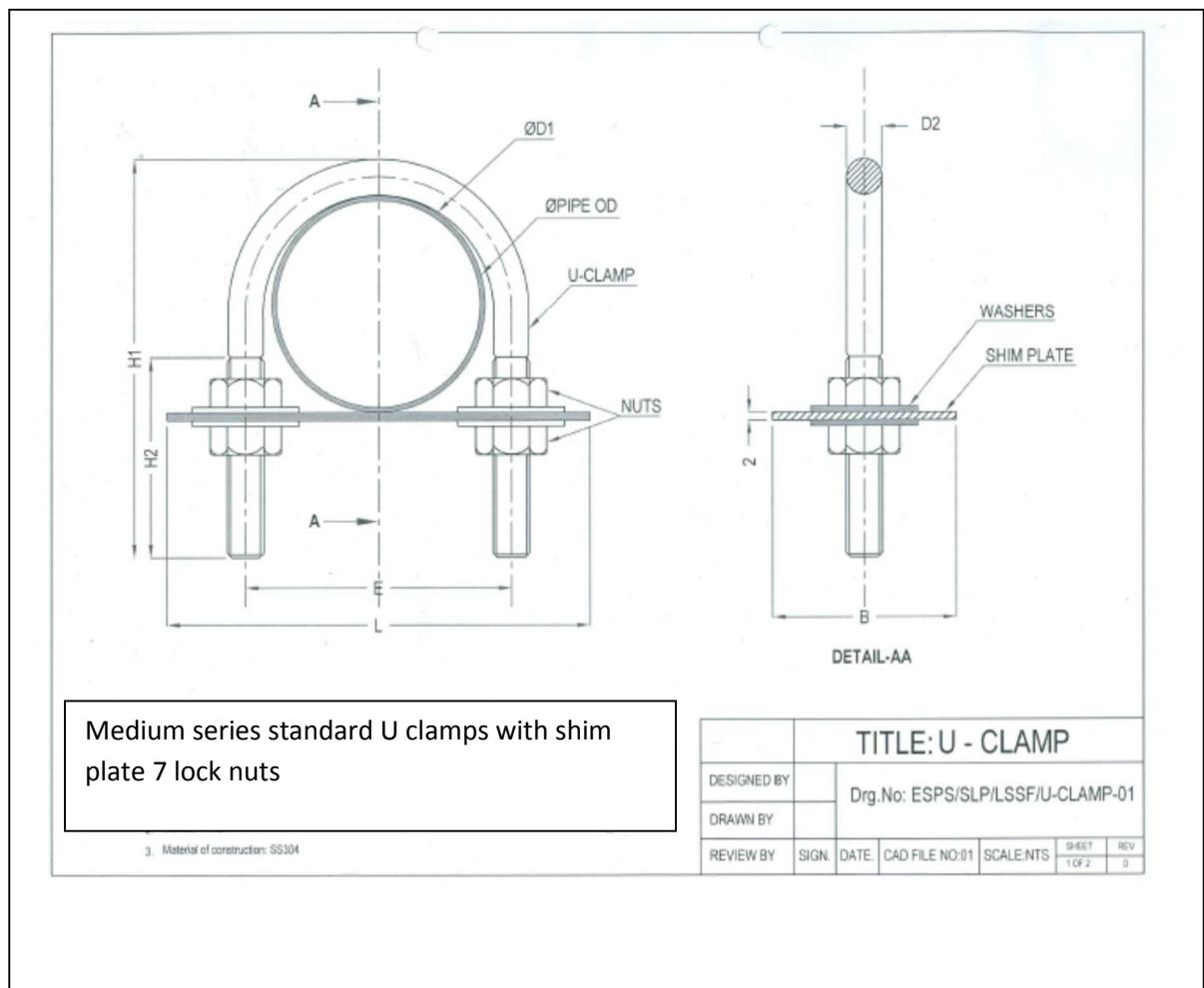
6. INSPECTION:

- Manufacture shall strictly adhere / follow QAP and necessary records shall be made available at the time of inspection.
- All nuts shall be made forged/machined from bar stock only.
- Each clamp shall be supplied with assembled condition, i.e 4 Nos of plain washer and 4 Nos of nuts in the clamp with shim plate.
- Manufacturers: Venkatewara Industries, Chennai/Mechwell fittings , Ahmedabad/Tec aero devices, Hyderabad/Lee hydraulics, Hyderabad/Dabir, Thane/VK technical works, Hyderabad.

QUALITY ASSURANCE PLAN (QAP):

S.N o.	Characteristic/ Type of Check	Ref. Document	Method of check	Quantum of check	
				Manufacturer's QC	Department Representative
1.	Dimensions and Visual inspection	As per Purchase order	Measurement and Visual inspection	100% H	10% W
2.	Mechanical Testing	ASTM A193 Gr. B8 ASTM A194 Gr.8	Review of Test certificates	100%R	100%R
3.	Chemical analysis	ASTM A193 Gr. B8 ASTM A194 Gr.8	Verification of material certificates	100%R	100%R
4.	Final Documentation	As per P.O	Verification of Documents / Certificates	100%H	100%R

LEGEND: R-Review, W-Witness, H-Hold.



III. Specification for SS Spiral Wound Teflon Gaskets with SS inner & outer rings

1. The gasket shall confirm to API 601 standard.
2. The thickness of the inner & outer rings shall be 3mm and that of gasket shall be 4.5mm. The SS spiral rings should not be projected beyond the Teflon rings. **The Teflon ring thickness of 0.25 mm extra is required top & bottom so that the total thickness of gasket will be 5 mm.**
3. The material of the rings (inner & outer) shall be 316L.
4. All the gaskets are to suit flanges of ANSI B 16.5 RF Standard, wherever specified.
5. Inspection & testing shall be carried-out as per code specified for dimensional, material tests, leak tightness, compressibility, sealability test etc.,
6. Cut edges of gaskets shall be neat & burr free

General conditions:

7. All items shall be inspected and cleared by Purchaser/Engineer before dispatch. Readiness of items for inspection shall be intimated to the purchase well in advance.
8. All the inspection and Test Certificates shall be furnished to the Purchaser.
9. The size, class rating, material of gaskets shall be marked on the ring wherever possible and others are to be tagged.
10. All gaskets suitably packed so that they don't get damaged during handling & transport.
11. Manufacturer: IGP/MIP/ Uniklinger

Sl. No.	Pipe Size	Qty. Nos.
1	15NB	100
2	20NB	100
3	25NB	50
4	40NB	40
5	50NB	40

Note: Minimum quantity SS spiral wound gaskets for flanged joints of pipe lines and flow components are given in the above table. The supplier to consider the cost of SS spiral wound gaskets along with SS piping erection as per details given in Table No. 1, Sl.No.3.

Specifications for supply of industrial filter for eye wash/emergency showers**I. SPECIFICATIONS FOR SUPPLY OF FILTER HOUSING WITH ELEMENT**

Sl. No.	End connection	Mic ron rati ng-μ	MOC	Design Pr. bar (g)	Hydro test pr. bar (g)	Qty. Filter housing Nos.	Spare Filter elements Qty. Nos.
1	FLANGED, SIZE:40NB,150#	100	SS316L	5	7.5	01	02

1.0 Process parameters

1. Fluid handled : Potable water
2. Operating temperature Range : 0° C to 50° C
3. Filtration efficiency :Absolute filter rating (Liquid particle retention's typically 98% Efficient at the stipulated pore size)
4. Percentage of filter opening : 70% - 85%
5. Flow rate at clean condition : 10 Cu.M/hr
6. Type of the element: Cartridge type pleated SS wire mesh (random fiber).
Multi layer (Number of layers to specified by the supplier).
7. Type of welding : TIG Welding
8. Filtration area : Greater than 5 times of inlet size.
9. Sealing ring Details:

Type of material	:	Teflon/ To be specified by the supplier
Cross section	:	Square/ To be specified by the supplier
Size	:	To be specified by the supplier

2.0 Welding

- i) 100% by GTAW process with high purity Argon gas purging and shielding, right from root to final passes for all butt welds (Long seams, 'C' seams, nozzles, pipe to flange joints) and all internal and external welds including fillet welds. SMAW is not acceptable.
- ii) Welding consumables (filler wire) shall be as per AWS classification or ER 316L or required as per the base material used.
- iii) The weld procedure specification and welder performance qualification shall be carried out. **Only qualified welders** shall be employed for the fabrication. WPS & PQR shall be reviewed by the purchaser.

5.0 Nozzles & Fittings:

- i) The nozzles shall be provided as shown in drawing to the shell pipe. All the nozzle flanges are SORF (serrated face) of SS 316L forged quality. All nozzles shall be single forged SORF (serrated face) flange of A182F 316L material. They should conform to ANSI B 16.5 RF.
- ii) All **pipe fittings shall be of butt-welded ends, seamless** type.

6.0 Body shall have a nameplate permanently fixed on shell pipe below lifting handle.

8.0 Testing:

8.1 Testing of materials: All materials used shall be tested as per Code in the Reputed Govt. approved testing labs before fabrication. All the parts proposed to be used for fabrication, shall be subjected to mechanical, chemical & IGC testing as per ASTM A 262 practice-E. (All testing charges shall be quoted separately.)

Note: All bought out items shall be tested as per above. The test certificates shall be reviewed & cleared by purchaser before fabrication (At least one sample of bought out item from each lot/Heat no has to be tested.)

8.2 Hydraulic Pressure Test:

- i) Hydraulic test is to be conducted on the filter body by closing all the nozzles and element mounting holes with suitable blinds. The test pressure shall be 1.5 times the design pressure and it should be done in the presence of a representative of the Purchaser. Clean potable water with chloride content of less than 50 PPM, shall be used for hydro testing. Test duration shall be minimum of 30 min.
- ii) Before hydraulic test, the internal surfaces of the bodies shall be mechanical cleaned and buffed.
- iii) After the final hydraulic pressure test, the bodies have to be degreased, pickled and passivated as per the procedure given below. The cleaning, pickling and passivation is to be carried out for both inside and outside surfaces of the body.

8.3 Mechanical Cleaning:

All metallic surfaces inside and outside having scales and foreign materials and all welded surfaces have to be cleaned. This can be done by scrubbing with metallic brush (Stainless Steel) followed by buffing to get a polished surface. The loose scales and powders obtained from the above process can be cleaned by blowing, sucking or washing with water. Mechanical cleaning and buffing shall be carried out after stress relieving, but before hydro test.

8.4 Pickling & Passivation:

Degreasing, pickling and passivation shall be carried out as per the following method for all the bodies after buffing and hydro testing.

1. Filling Method – For all internal surfaces.
2. Swabbing method using Barium Sulphate as an acid carrier – for all external surfaces.

8.4.1 Filling Method:

- a) Degreasing :

Degreasing has to be done by soaking with hot detergent solution of Lissapol at 60 Deg. to 70 Deg. C for at least 2 hours till satisfaction.

- b) Pickling :

By filling with solution containing Nitric Acid 15% by volume and hydro-fluoric acid (HF) 2% by volume, balance DM water.

Temperature : Ambient

Duration : 1 to 2 hours

- c) Rinsing

Thorough DM water rinsing until all traces of acid are removed from the surface.

- d) Passivation

By filling with solution of Nitric Acid 20-25% by volume balance DM Water.

Temperature : Ambient

Duration : 2 hours

Thorough rinsing with DM water till pH of the final rinse water is between 6.5 to 7.5 to minimize staining, surfaces must not be permitted to dry between successive steps of the acid cleaning or passivation and rinsing procedures.

The concentration of iron should not exceed 5% by weight in case of pickling solution and 2% weight in case of passivation.

8.4.2 Checking

All the relevant tests shall be carried out to ensure proper pickling and passivation as per ASTM A 380.

8.4.3 Drying

The drying is done to remove water and this is done as given below:

Passing dry Nitrogen/Air having dew point less than -40 Deg. C and free from oil and grease (less than 10 PPM) at 60 Deg. C till the moisture level at the exit comes to the inlet concentration value.

8.4.4 Swabbing Method for External Surfaces

The pickling and passivation is done with a solution already described and barium sulphate as carrier (chloride levels 25 ppm) in the form of paste. For each of pickling and passivation operations, the paste has to be applied on the surface and has to be kept for atleast two hours. Paste has to be removed with waste cotton in each operation and finally the surface has to be rinsed with DM water.

9.0 Pneumatic test:

All the filter bodies shall be tested at various joints at minimum of 10.0 bar (g) or as specified in the respective drawings by using clean & dry Nitrogen gas with dew point of minus 40 Deg. C or better and check the joint for leak with snoop solution.

10.0 Painting:

One coat of good quality Epoxy primer shall be painted on the external surface of the total Filter body.

12.0 General conditions:

- 12.1 The Supplier shall prepare detailed Fabrication Drawings and Fabrication shall be taken up only after the final approval of the drawing.
- 12.2 The details of each element such as material, micron rating, batch/lot number and serial numbers shall be marked / chemically etched on top end cap for easy identification.
- 12.3 All the reports/test results.as built drawings shall be supplied to the Purchaser.

Section – D
Formats to be filled

I. Checklist to Be Filled By The Contractor

The contractor shall confirm the following points. With regard to agreement on the scope defined in the work contract specifications without which the order will not be considered.

Sl. No.	Description	Complied (Yes/No)	Remarks
1	Confirm details of works to be carried out given in page no. 4 of RFP specifications “Realization of Compressed air system, breathing air system and Eye /Face wash & shower system for orbital module preparation facility (OMPF), which includes supply, fabrication, erection, testing, commissioning including painting as per the specifications given in Section-A to Section - D. ” – 1lot * is understood and accepted. (One Lot consists of the schedule of quantities as defined in Table-1)		
2	Confirm the Offer is submitted in two parts 1) Techno-Commercial Bid and 2) Price bid		
I.	SECTION - A GENERAL TERMS AND CONDITIONS FOR BID		
1	Confirm S1.No.01 , terms and conditions for Bids are understood and accepted.		
2	Confirm all Details for S1.No.02, Details to be furnished in techno-commercial bid & price bid, PART-I Techno-Commercial bid are understood and accepted.		
3	Confirm S1.No.2.1 , Tenderer shall note that indication of price in the techno-commercial bid shall lead to disqualification of bid is understood and followed.		
4	Confirm all Details for S1.No.2.2 FORMAT OF UN-PRICED BID (PRICES SHOULD NOT BE MENTIONED ANY WHERE IN PART-I) is filled and submitted.		
5	Confirm S1.No.2.3 Format to be filled signed and shall be uploaded by the supplier in techno-commercial bid., Terms and conditions for Bids are understood and accepted.		
6	Confirm all Details are furnished for S1.No.2.4, PART-II, Price bid indicating the price, and PRICE BID FORMAT (PRICES SHOULD BE MENTIONED IN PART-II ONLY)		
7	Confirm for Proposal document S1.No.1.1 to 1.7 , all points are followed.		
8	Confirm S1. No. 1.8, there is no Ambiguity		
9	Confirm for S1. No. B - Preparation of bids, points from 1.1 to 1.6 are understood and accepted.		
10	Confirm S1. No. C , bids submission is understood and accepted.		
11	Confirm S1. No. D , bids evaluation is understood and accepted.		
12	Confirmation of Commercial terms as per S1. No. E		
13	Confirm Point No. 1, Taxes, (S1. No. i to iii) is understood and accepted.		
14	Confirm Point No. 2, Delivery period: 8 Months is understood and accepted.		
15	Confirm Point No. 3, Terms of payment, (S1. No. 'a' to 'd') is understood S1.No.09 and accepted.		
16	Confirm Point No. 4 , Liquidated Damages (LD) clause is understood and accepted.		
17	Confirm Point No. 5 , Warranty clause is understood and accepted.		

	Description	Complied (Yes/No)	Remarks
18	Confirm Point No. 6 , Performance Bank Guarantee (PBG) clause is understood and accepted.		
19	Confirm Point No. 7 , Security Deposit clause is understood and accepted.		
20	Confirm Point No. 8 , Validity of the offer clause is understood and accepted.		
21	Confirm Point No. 9 , As all the scope of work is inter-related, Bidder has to quote for all the items listed in the Technical specification (Section-B & C), Schedule of quantities without which the offer will not be considered.		
21	Confirm Point No. 10, Force majeure clause is understood and accepted.		
23	Confirm Point No. 11 , Arbitration clause is understood and accepted.		
24	Confirm Point No. 12 , Secrecy clause is understood and accepted.		
25	Confirm Point No. 13 , Compliance with security requirements clause is understood and accepted.		
26	Confirm Point No. 14 , Confidentiality and proprietary right protection clause is understood and accepted.		
27	Confirm Point No. 15 , instructions to the bidder are understood and accepted.		
28	Confirm Point No. 16 , terms and conditions to Bidder are understood and accepted.		
29	Confirm Point No. 17 , specific requirements are understood and accepted.		
30	Confirm Point No. 18 , unit rates clause is understood and accepted.		
31	Confirm Point No. 19 , Confirm Safety clause is understood and accepted.		
32	Confirm Point No. 20 , General conditions clause is understood and accepted.		
33	Confirm Point No. 21 , Transportation & Material Handling clause is understood and accepted, Sl.No.24.		
34	Confirm Point No. 22 , Evaluation of machinery, man power & consumables clause is accepted.		
35	Confirm Point No. 23 , Medical assistance clause is understood and accepted.		
36	Confirm Point No. 24 , Bidder minimum qualification criteria is understood and accepted.		
37	Confirm Point No. 25 , Confirm Bidder evaluation criteria clause is understood and accepted.		
II.	SECTION-B TECHNICAL SPECIFICATIONS FOR WORKS TO BE CARRIED OUT AT SITE		
1	Specification for fabrication, erection, testing and commissioning of Stainless steel Pipelines for Compressed air & Breathing air system and Eye wash showers system of orbital module preparation facility (OMPf), including supply of pipes, pipe fittings, Equipment and flow components. Chapter-1		
2	Confirm Point No. 02 , Scope of work		

Sl. No.	Description	Complied (Yes/No)	Remarks
3	Confirm Point No. 03 , Detailed scope of work (Sl.No.3.1 to 3.10)		
4	Confirm Point No. 04 , Procedure for SS piping fabrication works and erection work:		
5	Confirm Point No. 05 , Procedure for Fabrication and Erection of M.S Structural Steel is understood and accepted.		
6	Confirm Point No. 06 , Wrapper Coating is understood and accepted.		
7	Confirm Point No. 07 , Testing, Evaluation & Commissioning is understood and accepted.		
8	Confirm Point No. 08, Painting is understood and accepted.		
9	Confirm Point No. 09 , Transportation & material Handling is understood and accepted.		
10	Confirm Point No. 10 , Electrical is understood and accepted.		
11	Confirm Point No. 11 , Minimum requirements need to be ensured by the contract agency. (Sl.No.11.1 to 11.4) is understood and accepted.		
12	Confirm Point No. 12 , Scope of department is understood and accepted.		
13	Confirm Annexure-I , Procedure for Stainless steel piping system erection works is understood and accepted.		
14	Confirm Annexure-II , Procedure for Fabrication and Erection of M.S Structural Steel is understood and accepted.		
15	Confirm Annexure-III , Procedure for providing RCC pipe pedestals, Equipment foundation and related Civil Works is understood and accepted.		
16	Confirm Annexure-IV , Procedure for Application of Wrapping and Coating Materials for SS buried Underground Piping is understood and accepted.		
17	Confirm Annexure-V , Erection of Equipment (Air receiver) is understood and accepted.		
III.	SECTION-C, Technical Specification for supply of items		
1	Confirm Chapter-1 , Specifications for SS Air receivers is understood and accepted.		
2	Confirm Chapter-2 , Specifications for Breathing air purifier is understood and accepted.		
3	Confirm Chapter-3 , Specifications for SS ball valves is understood and accepted.		
4	Confirm Chapter-4 , Specifications for filter cum pressure regulators is understood and accepted.		
5	Confirm Chapter-5 , Specifications for filters is understood and accepted.		
6	Confirm Chapter-6 , Specifications for Gauge shut off valves is understood and accepted.		
7	Confirm Chapter-7 , Specifications for Quick release couplings is understood and accepted.		
8	Confirm Chapter-8 , Specifications for Eye/Face Wash Showers is understood and accepted.		
9	Confirm Chapter-9 , Specifications for MS structural is understood and accepted.		

10	Confirm Chapter-10 , Specifications for paints is understood and accepted.		
Sl. No.	Description	Complied (Yes/No)	Remarks
11	Confirm Chapter-11 , Specifications for Miscellaneous items like SS fasteners, SS U-clamps, SS-spiral wound gaskets for erection of pipelines is understood and accepted.		
12	Confirm Chapter-12 , Specifications for supply of industrial filter for eye wash/emergency showers understood and accepted.		
IV	SECTION-D, Formats to be submitted by Bidder		
1	Checklist to be filled by the contractor		
2	Format to be filled signed and shall be uploaded by the supplier in techno-commercial bid		
3	Confirm Bidder Minimum Qualification Criteria is filled and submitted.		
4	Confirm Evaluation Criteria is filled and submitted.		

II. Format to be filled signed and shall be uploaded by the supplier in technico-commercial bid:

Sl. No.	Description	Yes / No
1	The scope of work is fully understood by the supplier.	
2	Confirm all the specifications and terms & conditions are acceptable.	
3	Confirm the specification of items to be supplied can be met by the supplier.	
4	Confirm the supply portions of items are fully quoted as per Section-C, exclusions if any shall be mentioned clearly.	
5	The individual item wise cost is to be quoted as per the Price bid format	
6	The details like taxes are clearly indicated for each line item.	
7	The mobilization charges for men / machineries / materials are considered and they are included in the basic cost.	
8	Modality of execution of contract, terms, rules & regulations, general conditions of execution of contract are read and all points are acceptable.	
9	Bidder Qualification Criteria and Evaluation criteria formats duly filled and signed.	
10	It is noted that the contract will be awarded to overall lowest only. Since procurement, supply and work contracts are interlinked; splitting of order is not possible.	

Signature of the bidder

II. Bidder Minimum Qualification Criteria

The following are the minimum essential criteria to further validate/accept the bid. Vendor is requested to provide all the necessary supporting documents. If any deviation/non-compliances/lack of supporting document bid shall be summarily rejected.

S1. No.	Description	Vendor Compliance With Supporting Documents
1	The Bidder should be Company/Society/Firm registered in India since last 3 (Three) years or more. Company Profile along with documentary evidence of services offered and all relevant enclosures to be submitted.	
2	During Last Three years ending 31.03.2020 , the bidders should have successfully completed either of the following similar work. Realization of Compressed air system, breathing air system and Eye wash & shower system (SS Piping systems) for Orbital Module Preparation Facility (OMPF), which includes supply, fabrication, erection, testing, painting & commissioning as per the specifications given in Section-A to Section – D . One Similar completed work not less than Rs. 80 Lakhs, Two Similar completed works each not less than Rs. 60 Lakhs each, Three similar completed works each not less than Rs. 40 Lakhs each.	
3	The Bidder's annual financial turnover shall be not less than Rs. 120 lakhs per year during last three financial years ending with 31.03.2020.	
4	PO and Satisfactory Work completion certificate by the end user for the previous executed orders shall be submitted without which offer will not be considered.	
5	Audited balance sheet & Profit & Loss A/c is to be submitted (or) Copy of the IT return filed / audited last 3 years financial statements for Financial years ending with 31.03.2020.	
6	Vendor must undertake supply, erection, testing and commissioning of piping system as per the specifications and requirements indicated in the RFP.	
7	Latest solvency certificate for the current financial year 2020-21 from any Nationalized/Scheduled bank shall be submitted for a value of minimum Rs.40 lakhs.	
8	Technical compliance to the specifications shall be vetted by the bidder.	
9	The firm must provide a self-declaration that there is no complaint/vigilance inquiry against them in any Govt. /Department /PSU and they have not been black listed by any Govt. Department/PSU.	
10	The supplier shall mention his welding team details, equipment's/ machineries, facilities if any.	

Note:

Technical proposal of the bidder, which is not able to substantiate/satisfy the claims made by it with respect to the technical requirements laid down in this RFP, will be summarily rejected.

Offers of those bidders taking full scope of the as per the RFP only will be considered.

Signature of Authorized Person with Seal

IV. Evaluation Criteria. The broad guidelines for evaluation of Bids will be as follows:

Sl. No.	Description	Vendor Compliance
1	In respect of Two-Bid system, the technical Bids forwarded by the Bidders will be evaluated by the Department with reference to the technical specifications as mentioned in the RFP. The compliance of Technical Bids would be determined on the basis of the parameters specified in the RFP. The Price Bids of only those Bidders will be opened whose Technical Bids would clear the technical evaluation.	
2	During evaluation, SDSC SHAR may request Bidder for any clarification on the bid, additional documents.	
3	Bidder must provide the point-by-point compliance to the technical specifications along with deviations. The tender can be rejected if the deviations are not acceptable to the Department.	
4	Performance of Bidder on similar nature of works executed/ under execution shall be taken into consideration before selecting the Bidder for opening his price bid.	
5	The time schedule for completion is given in the Proposal document. Bidder is required to confirm the completion period unconditionally.	
6	SDSC SHAR reserves the right to reject any bid if technically/commercially not meeting the requirement/terms & conditions. Such decisions by the SDSC SHAR shall bear no liability whatsoever consequent upon such decision.	
7	Total price inclusive of all taxes, duties, shall be considered for arriving L1 (Overall Lowest) and awarding the contract as per the procedures.	
8	If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.	
9	As all the items within RFP are inter dependent, splitting of the order/WORK is not possible. Hence Overall lowest bidder will be considered	
10	Department reserves the right to inspect the contractor shop floor/premises for evaluation, if required. After evaluating the contractor, decision of the Department is final.	
11	The supplier shall mention his welding team details, equipment's / machineries, facilities if any	

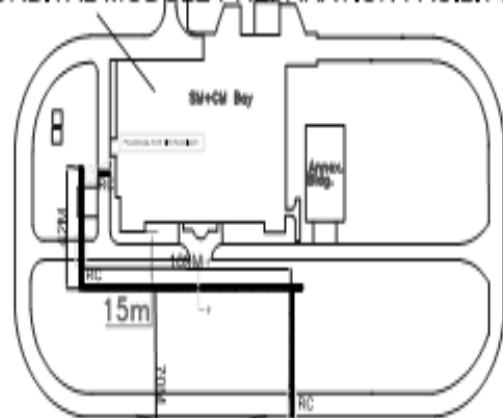
Signature of Authorized Person with Seal

Section – E

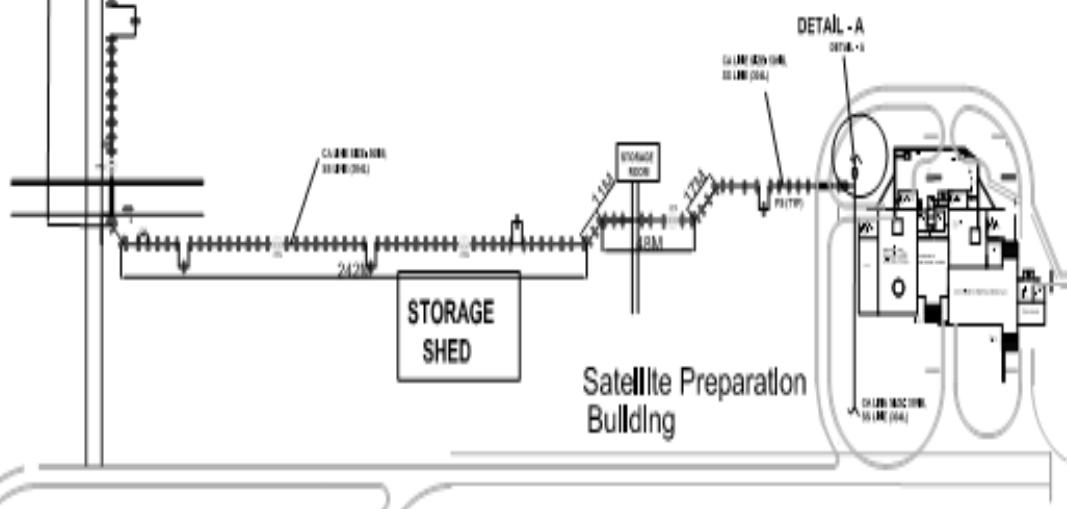
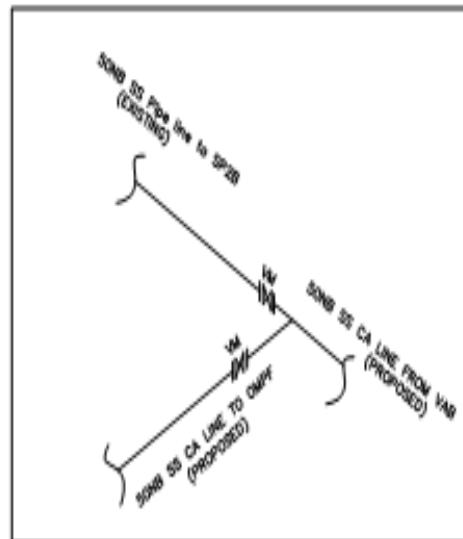
DRAWINGS

Sl. No.	Drawing No.	Description
1	SS/OMP/CA/BA/OVERALL LAYOUT/01	Overall layout of OMP Facilities
2.	SS/OMP/CA/BA/P&I/01	P & I Diagram of CA & BA System
3.	SS/OMP/CA/BA/AIR RECEIVER/01	SS Air Receiver
4.	DRG.NO. SS/OMP/CA, BA & EYE WASH SHOWER SYSTEM LAY OUT/01	Details of CA, BA POINTS & Eye wash shower units at OMPF.

ORBITAL MODULE PREPARATION FACILITY-OMPF



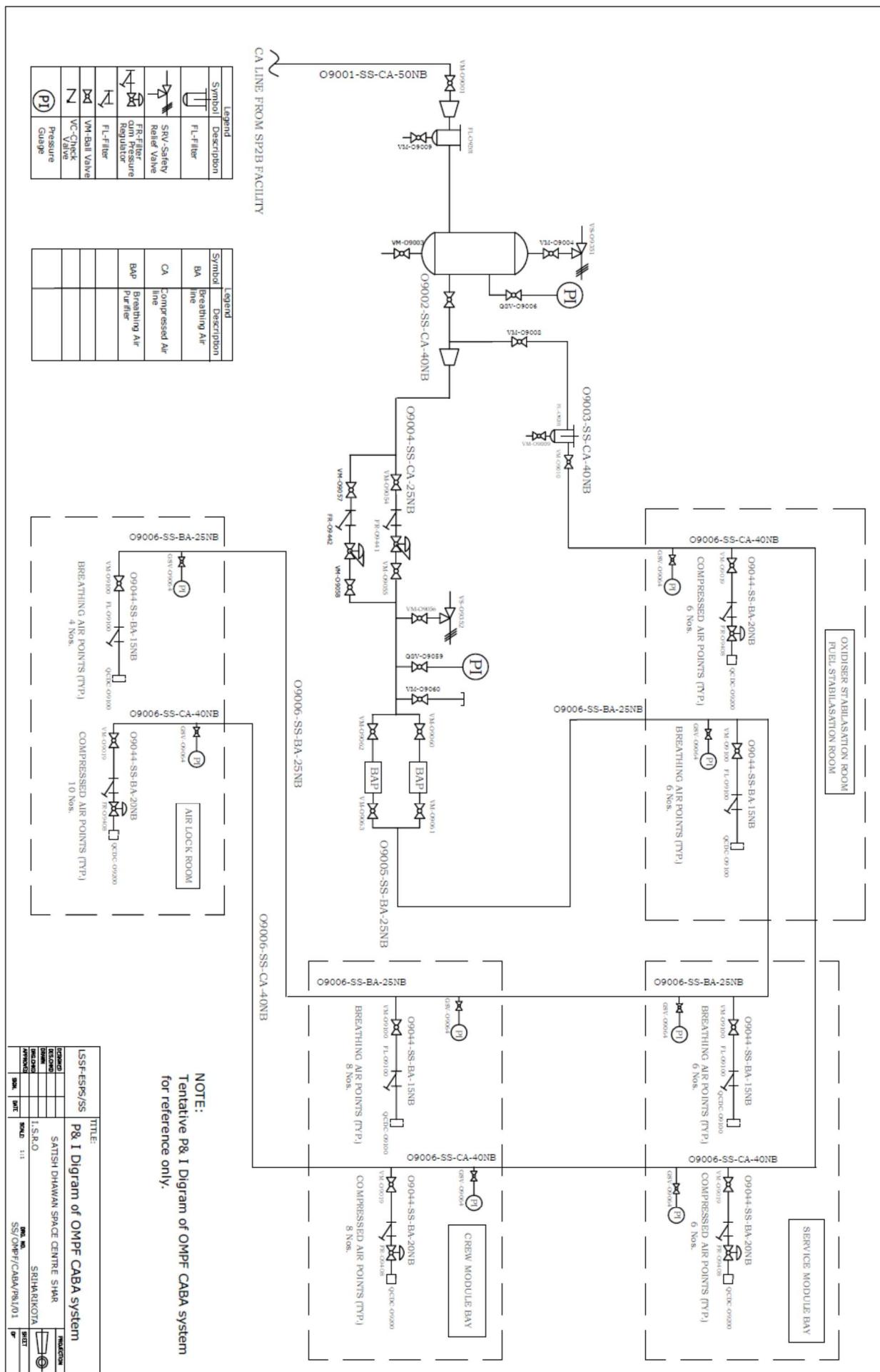
SL No.	Symbol	Description
1	VM	MANUAL VALVE
2	PB	Pipe Protection Refrig. Drawing no.GR/GN/Year/OMPFI/Hydrant/2020/01
3	FPS	Fire Protection Drawing no.GR/GN/Year/OMPFI/Hydrant/2020/02
4		
5	RC	Trench at road Crossing Location
6		Pipe trench for front portion of the building
6	AIR RECEIVER	AIR RECEIVER PEDESTAL

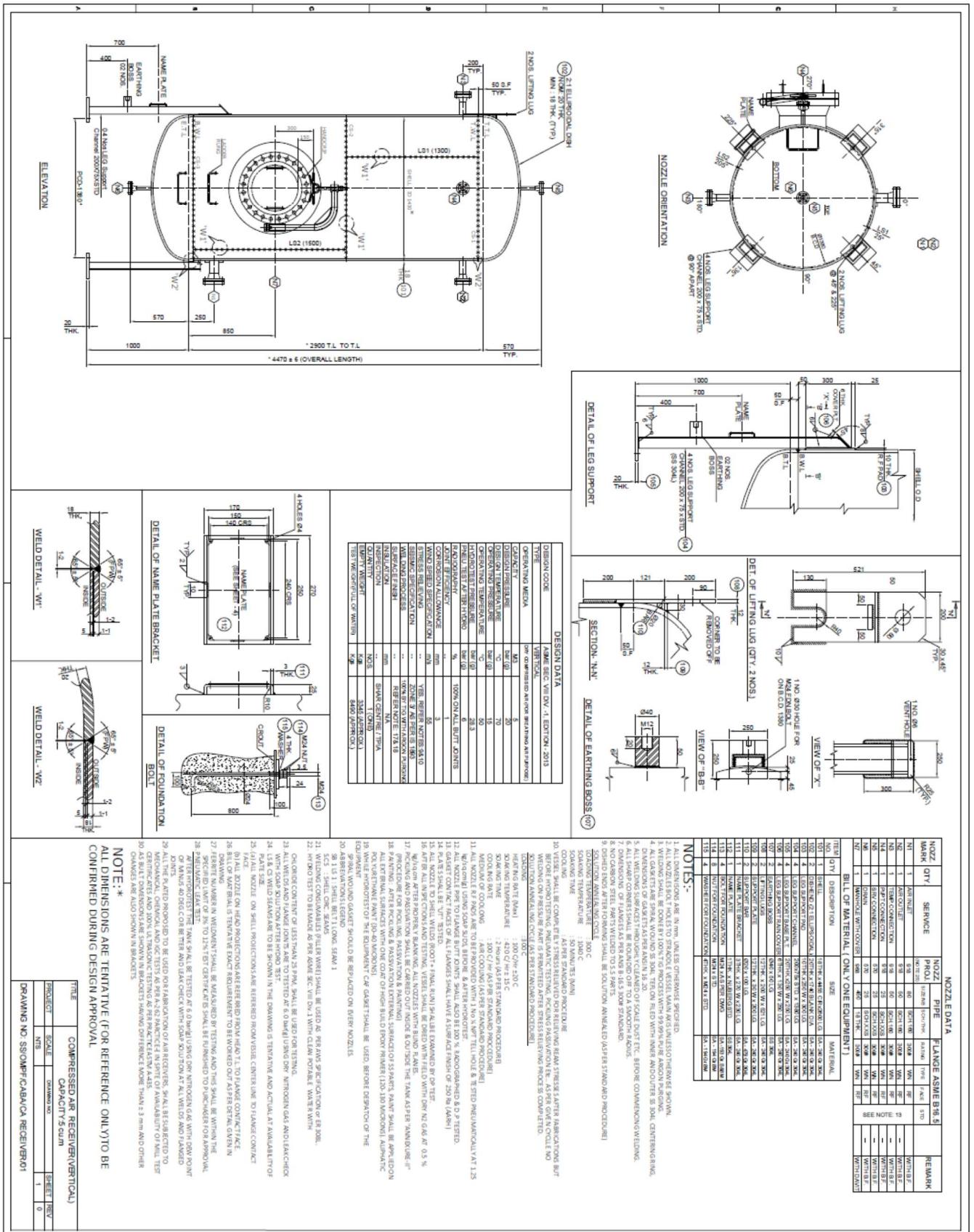


Note : 1). All Dimensions are in Metres.

REFER P & I DRG.NO.SS/OMPFI/CABA/P&I/01

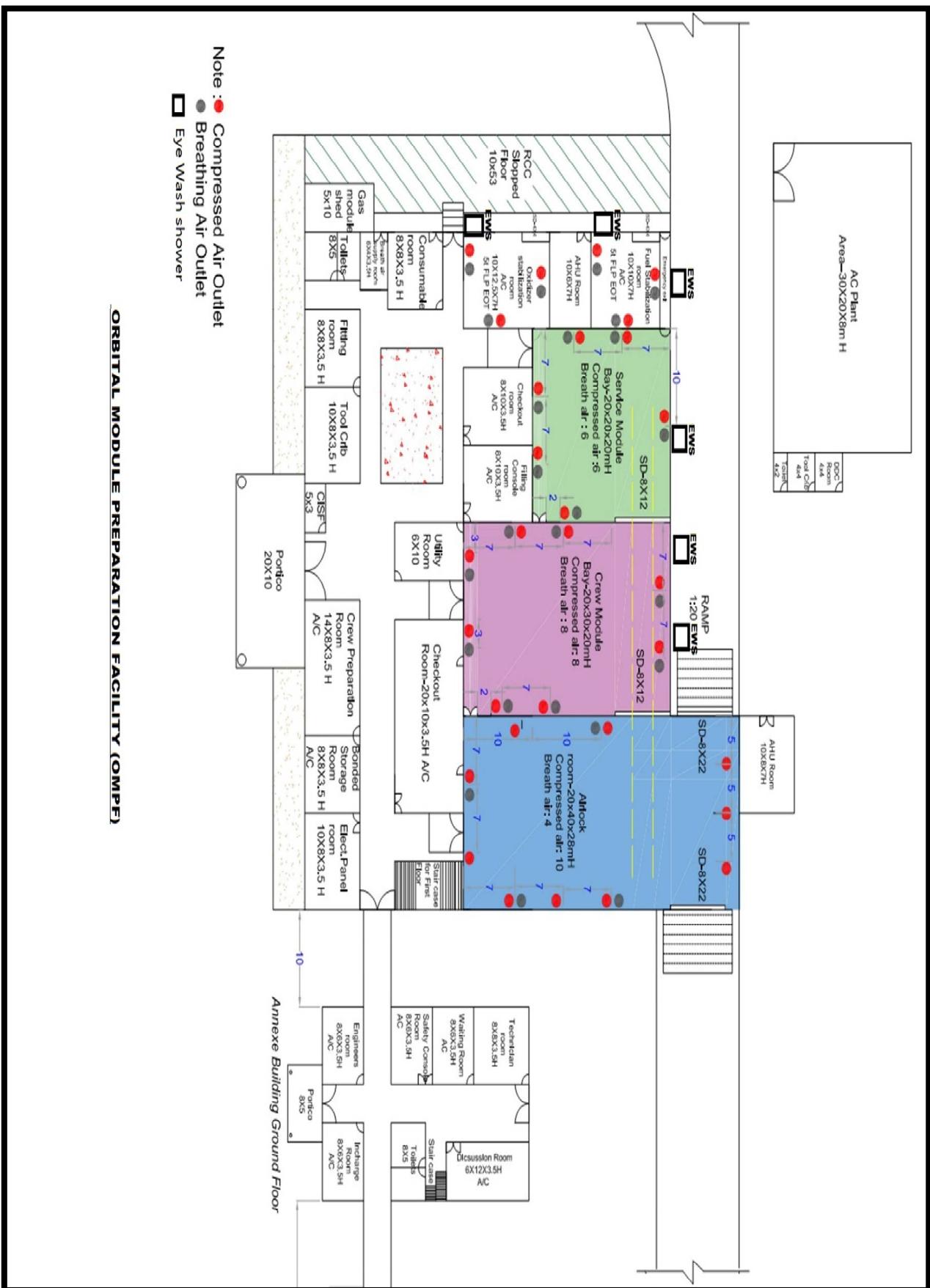
Title : Overall layout of OMPF Facilities
PROPOSED ROUTING OF CA LINE TO OMPF
Drg. No. SS/OMPFI/CABA/OVERALL LAYOUT/01

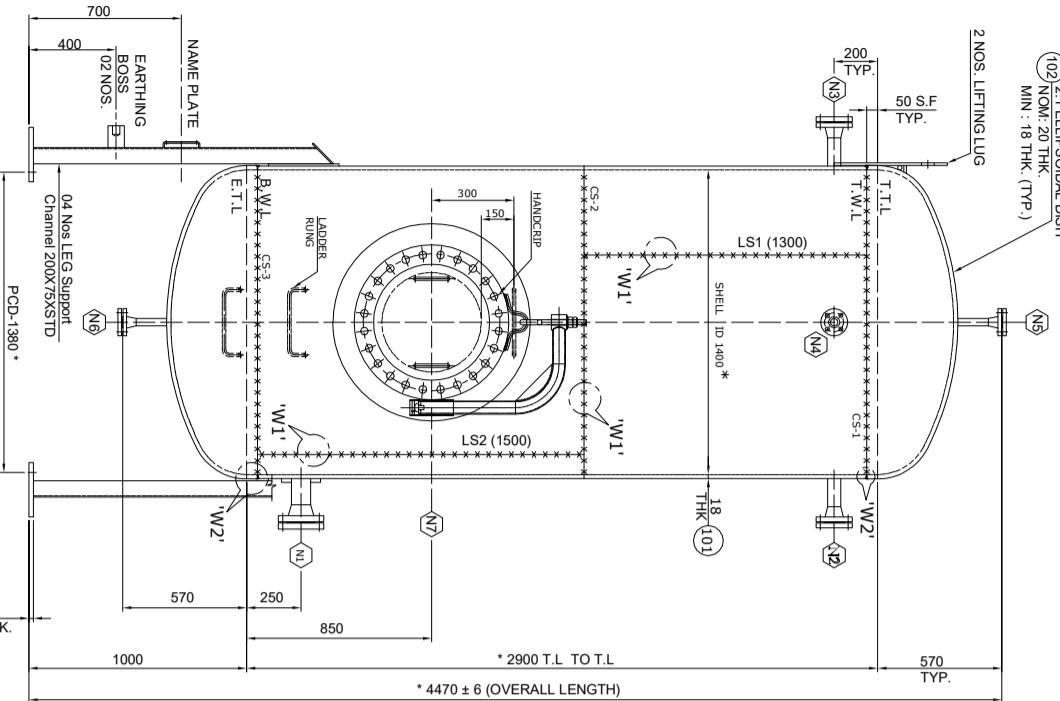




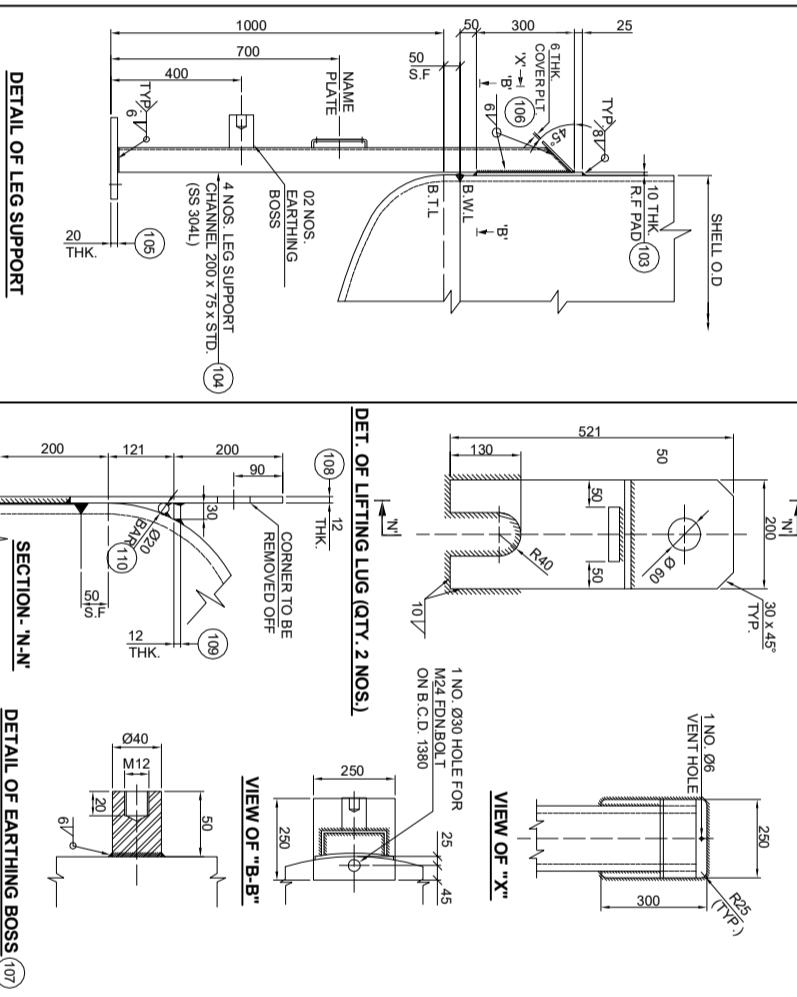
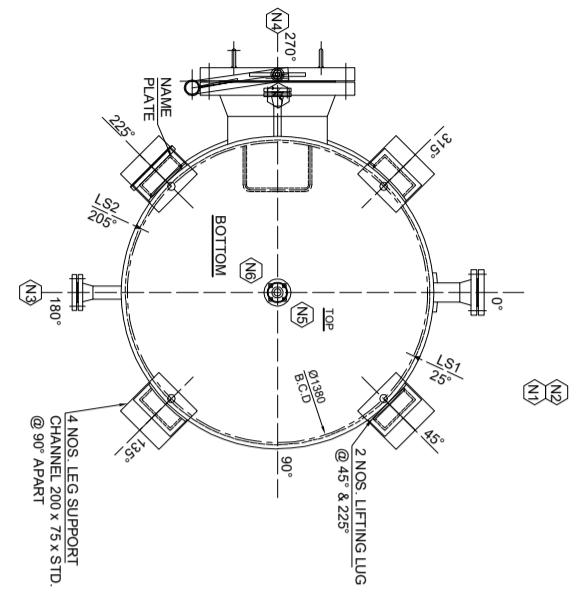
Details of CA, BA POINTS & Eye wash shower units at OMPF.

DRG.NO. SS/OMPF/CA, BA & EYE WASH SHOWER SYSTEM LAY OUT/01





NOZZLE ORIENTATION



NOZZLE DATA					
NOZZ. MARK	QTY.	SERVICE	NOZZ. PIPE	FLANGE ASME B16.5	
N1	1	AIR INLET	(NOTE-25)	ASME SEC. VIII DIV.-1, EDITION - 2013	REMARK
N2	1	AIR OUTLET	918	80 SCH. 60 300# WN RF	WITH B.F.
N3	1	TEMR CONNECTION	918	50 SCH. 60 300# WN RF	—
N4	1	PIPP CONNECTION	918	25 SCH. X-XS 300# WN RF	WITH B.F.
N5	1	SHV CONNECTION	570	25 SCH. X-XS 300# WN RF	—
N6	1	DRAIN	570	25 SCH. X-XS 300# WN RF	WITH B.F.
N7	1	MANHOLE WITH COVER	968	450 18 THK. 300# WN RF	WITH B.D.

BILL OF MATERIAL (ONLY ONE EQUIPMENT)

ITEM NO.	QTY.	DESCRIPTION	SIZE	MATERIAL
101	1	SHELL	18THK X4455 CIRK-2801 LG	SA-240 G-304L
102	2	DISHEND 21 ELLPSODAL	20THK X4455 CIRK-2801 LG	SA-240 G-304L
103	4	LEG SUPPORT PAD	20THK X250 W X500 LG	SA-240 G-304L
104	4	LEG SUPPORT CHANNEL	200X75X370 X1380 LG	SA-240 G-304L
105	4	LEG SUPPORT BASE PLT.	20THK X250 W X250 LG	SA-240 G-304L
106	4	LEG SUPPORT TRAIN COVER	67Hk X-250 W X-250 LG	SA-240 G-304L
107	2	EARTHING BOSS	040 X50 LG	SA-240 G-304L
108	2	LIFTING LUGS	12THK X200 W X521 LG	SA-240 G-304L
109	2	SUPPORT PLATE	12THK X30 W X200 LG	SA-240 G-304L
110	2	NAME PLATE	020 X100 LG	SA-470 G-304L
111	1	NAME PLATE BRACKET	3THK X-270 W X300 LG	SA-240 G-304L
112	1	NAME PLATE	11Hk X-110 W X-110 LG	SA-194 G-28M
113	4	BOLT FOR FOUNDATION	M24 X-100 STD	SA-194 G-28M
114	8	NUT FOR FOUNDATION	M24 X STD	SA-194 G-28M
115	4	WASHER FOR FOUNDATION	4THK X M24 X STD	SA-194 G-28M

NOTES:-

1. ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE SPECIFIED.

2. ALL NOZZLES BOLT HOLES TO STRAIGHT VESSEL MAIN AXIALLY UNLESS OTHERWISE SHOWN.

3. WELDING SHALL BE DONE BY 100% TIG PROCESS WITH 99.99% PURE ARGON PURGING.

4. ALL GASKETS ARE SPIRAL WOUND SS 304 TEFLON FILLED WITH INNER AND OUTER SS 304. CENTERING RING.

5. DIMENSIONS OF GASKETS AS PER ANSI N15.20.

6. ALL WELDING SURFACES THOROUGHLY CLEANED OF SCALE DUST ETC. BEFORE COMMENCING WELDING.

7. DIMENSIONS OF FLANGES AS PER ANSI B16.5 300# ST STANDARD.

8. NO CARBON STEEL PARTS WELDED TO SS PARTS.

9. DISHE ENDS AFTER FORMING SHALL BE SOLUTION ANNEALED (AS PER STANDARD PROCEDURE).

SOLUTION ANNEALING CYCLE

LOADING TEMPERATURE : 300°C

COOKING TIME : 50 MINUTES (MIN)

: AS PER STANDARD PROCEDURE

10. VESSEL SHALL BE COMPLETELY STRESS RELIEVED FOR RELIEVING REAM STRESSES AFTER FABRICATIONS BUT WELDING ON PRESSURE PART IS PERMITTED AFTER STRESS RELIEVING PROCESS COMPLETED.

SOLUTION ANNEALING CYCLE (AS PER STANDARD PROCEDURE)

LOADING : 300C

HEATING RATE (Max) : 100°C/H ±20C

DESIGN PRESSURE : 20 bar (g)

DESIGN TEMPERATURE : 70 °C

OPERATING PRESSURE : 15 bar (g)

OPERATING TEMPERATURE : 50 °C

PNEU TEST PRESSURE : 28.3 bar (g)

RADIOGRAPHY : 6 %

JOINT EFFICIENCY : 100% ON ALL BUTT JOINTS

CORROSION ALLOWANCE : 1 mm

WIND SPEED SPECIFICATION : 55 m/s

STRESS RELIEVING : YES, REFER NOTES-9&10

SEISMIC SPECIFICATION : ZONE 3 AS PER IS 883

WELDING PROCESS : 100% BY TIG WITH ARGON PURGING

INSULATION : REFER NOTE: 17& 18

INSPECTION : NA

QUANTITY : 1 (ONE)

EMPTY WEIGHT : 3345 (APPROX.)

TEST WEIGHT(FULL OF WATER) : 8490 (APPROX.)

11. ALL NOZZLE R.F.PADS ARE TO BE PROVIDED WITH 1 NO 1/2 INCH NUT & 1/2 INCH NUT & TESTED PNEUMATICALLY AT 1.25 kg/sq.cm AFTER PROPERLY BLANKING. ALL NOZZLES WITH BLOW FLAMES.

12. ALL NOZZLE PIPE TO FLANGE BUTT JOINTS SHALL ALSO BE 100% RADIOPGRAPHED & DT TESTED.

13. GASKET CONTACT FACES OF ALL FLANGES SHALL HAVE A SURFACE FINISH OF 250 Ra (ARH)

14. PLATESHALL BE U/T TESTED.

15. ALL NOZZLE TO SHELL WELDS (ROOT + FINAL) SHALL BE EXAMINED BY DP TEST.

16. AFTER ALL INSPECTIONS AND TESTING, VESSEL SHALL BE DRIED WITH FIELD DRY N2 GAS AT 0.5%

kg/sq.cm AFTER PROPERLY BLANKING. ALL NOZZLES WITH BLOW FLAMES.

17. PICKLING AND PASSIVATION SHALL BE CARRIED OUT INSIDE & OUTSIDE THE TANK AS PER "ANNEXURE II"

(PROCEDURE FOR PICKLING, PASSIVATION & PAINTING)

18. PAINTING: AFTER PICKLING & PASSIVATION EXTERNAL SURFACES OF SS PARTS, PAINT SHALL BE APPLIED ON

ALL EXTERNAL SURFACES WITH ONE COAT OF HIGH BUILD EPOXY PRIMER (120-130 MICRONS), ALIPHATIC POLYURETHANE PAINT (30-40 MICRONS).

19. WHILE HYDROTEST OF THE EQUIPMENT (IF GASKET SHALL BE USED), BEFORE DESPATCH OF THE EQUIPMENT, SPIRAL WOUND GASKET SHOULD BE REPLACED ON EVERY NOZZLES.

20. ABBREVIATIONS LEGEND

S9115.1: SHELL BELT 1 LONG. SEAM 1

S.C.S : SHELL GIRC. SEAMS

21. WELDING CONSUMABLES (FILLER WIRE) SHALL BE USED AS PER ASME SEC VIII DIV-1 WITH CLEAN POTABLE WATER WITH 22. HYDRO TEST TO BE MADE AS PER ASME SEC VIII DIV-1 WITH CLEAN POTABLE WATER WITH

23. CHLORIDE CONTENT OF LESS THAN 25 PPM, SHALL BE USED FOR TESTING.

24. ALL WELDS AND FLANGE JOINTS ARE TO BE TESTED AT 6.0 bar(g) USING DRY NITROGEN GAS AND LEAK CHECK WITH SOAP SOLUTION AFTER HYDRO TEST.

25. (a) ALL NOZZLE ON SHELL PROJECTIONS ARE REFERRED FROM VESSEL CENTER LINE TO FLANGE CONTACT FACE.

(b) ALL NOZZLE HEAD PROJECTIONS ARE REFERRED FROM HEAD T.L TO FLANGE CONTACT FACE.

26. BILL OF MATERIAL IS TENTATIVE EXACT REQUIREMENT TO BE WORKED OUT AS PER DETAIL GIVEN IN DRAWING

27. FERRITE NUMBER IN WELDMENT SHALL BE MEASURED BY TESTING AND THIS SHALL BE WITHIN THE SPECIFIED LIMIT OF 3% TO 12% TEST CERTIFICATES SHALL BE FURNISHED TO PURCHASER FOR APPROVAL

28. PREHYDRO TEST:

29. AFTER HYDROTEST THE TANK SHALL BE TESTED AT 6.0 bar(g) USING DRY NITROGEN GAS WITH DEW POINT OF MINUS 40 DEG.C OR BETTER AND LEAK CHECK WITH SOAP SOLUTION AT ALL WELDS AND FLANGED JOINTS.

30. ALL THE PLATED PROPOSED TO BE USED FOR FABRICATION OF AIR RECEIVERS SHALL BE SUBJECTED TO MECHANICAL, CHEMICAL AND IGC TESTS AS PER A-262 PARC-E IN SPITE OF AVAILABILITY OF MILL TEST CERTIFICATES AND 100% ULTRASONIC TESTING AS PER PRACTICE ASTM A-435.

31. AS-BUILT DIMENSIONS ARE SHOWN IN BRACKETS HAVING DIFFERENCE MORE THAN ± 3 mm AND OTHER CHANGES ARE ALSO SHOWN IN BRACKETS.

NOTE: *

ALL DIMENSIONS ARE TENTATIVE (FOR REFERENCE ONLY) TO BE CONFIRMED DURING DESIGN APPROVAL

TITLE : COMPRESSED AIR RECEIVER(VERTICAL)

PROJECT : NTS

SCALE : DRAWING NO. :

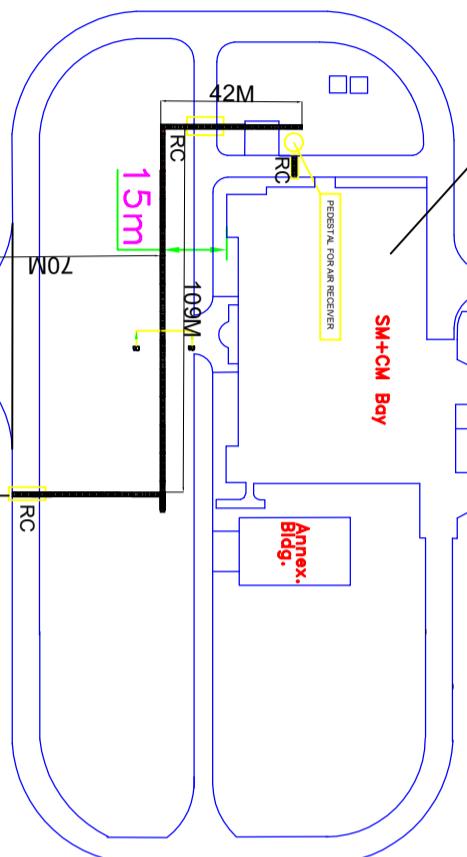
DRAWING NO. : SS/OMP/CABA/CAR RECEIVER/01

ELEVATION

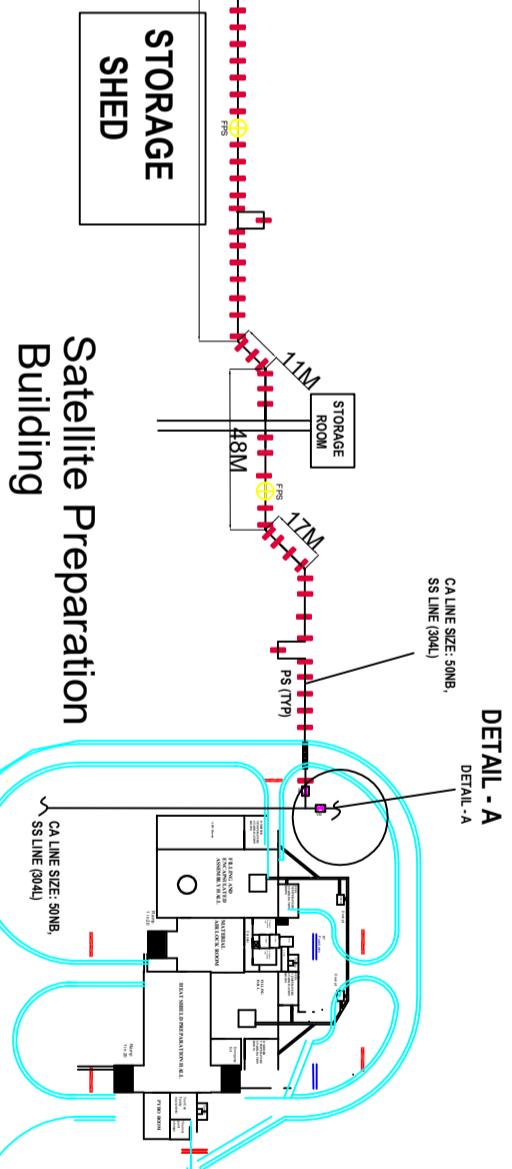
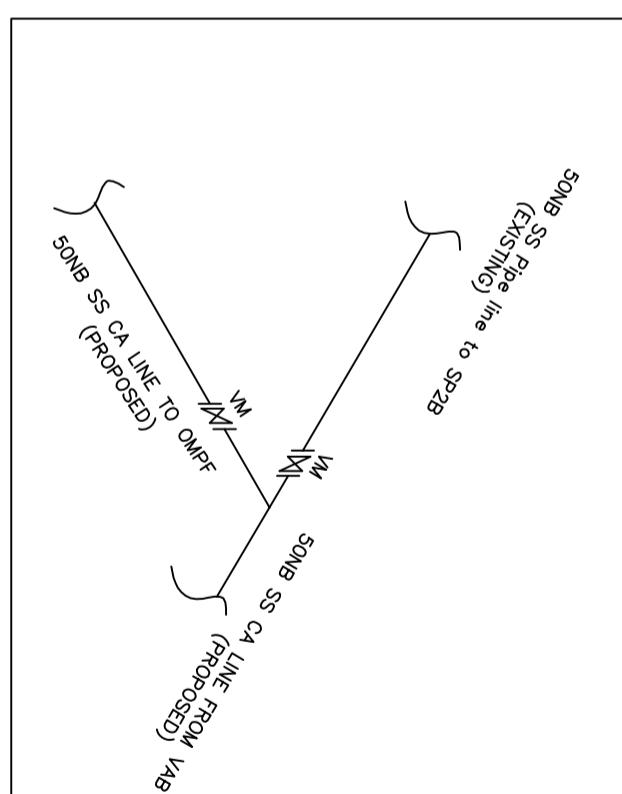
WELD DETAIL - W1'

WELD DETAIL - W2'

ORBITAL MODULE PREPARATION FACILITY-OMPf



Sl. No.	Symbol	Description
1	VM	MANUAL VALVE
2	PS	Pipe Pedestal (Refer dwg. Drawing no GAGAN/yaan/OMPf/Hydant/2020/01)
3	FPS	Fixed Pedestal Drawing no GAGAN/yaan/OMPf/Hydant/2020/02
4	RC	Trench at road Crossing Location
5		Pipe trench for front portion of the building
6	AIR RECEIVER	AIR RECEIVER PEDESTAL



Note : 1). All Dimensions are in Metres.

REFER P& I DRG.NO.SS/OMPf/CABA/P&I/01

Title : Overall layout of OMPF Facilities
PROPOSED ROUTING OF CA LINE TO OMPF
Drg. No. SS/OMPf/CABA/OVERALL LAYOUT/01



Satish Dhawan Space Center SHAR

Welcome, Materials Master (isro)

31 August 2017,
17:16:08 IST

MAIN VIEW

HELP

Preview For STANDARD TERMS AND CONDITIONS

Page Destination: Tender Header **Format Type :** Normal

..:

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
SATISH DHAWAN SPACE CENTRE
PURCHASE DIVISION

Tele No.08623-225023/225174/225127
Fax No.08623-225170/22-5028
e-Mail ID : hps@shar.gov.in, hasan@shar.gov.in, sselvan@shar.gov.in

STANDARD TERMS & CONDITIONS

1.OFFERS SHALL BE SENT ONLINE ONLY USING STANDARD DIGITAL SIGNATURE CERTIFICATE OF CLASS III WITH ENCRYPTION / DECRYPTION. THE TENDERS AUTHORISED ONLINE ON OR BEFORE THE OPEN AUTHORISATION DATE AND TIME ONLY WILL BE CONSIDERED AS VALID TENDERS EVEN THOUGH THE BIDS ARE SUBMITTED ONLINE.

2.THE TENDERER MUST AUTHORISE BID OPENING WITHIN THE TIME STIPULATED IN THE SCHEDULE BY SDSC SHAR. OTHERWISE THE ONLINE BID SUBMITTED WILL NOT BE CONSIDERED FOR EVALUATION. PHYSICAL COPY WILL NOT BE CONSIDERED EVEN THOUGH IT IS RECEIVED BEFORE THE BID SUBMISSION DATE.

In case of two-part tenders, parties shall submit their offers as follows:-

1) Part-I – Techno-commercial Bid

(No price details shall be mentioned in this bid and shall not upload the details of price along with the techno-commercial bid)

2) Part-II – Price Bid

In view of Two Part Tender, the Offers submitted contrary to above instructions will be summarily rejected.

3.In case, the tenderer is not interested to participate in the tender, the tenderer shall submit regret letter giving reasons, failing which future enquiries will not be sent.

4.**Offer Validity:** The validity of the offers / tenders should be 90 days (in case of single part tender) and 120 days (in case two part tender) from the date of opening of the tenders. Tenders with offer validity less than the period mentioned above, will not be considered for evaluation.

5.**GST** - GST and/or other duties/levies legally leviable and intended to be claimed should be distinctly shown separately in the tender. GST details are given below

GSTIN: 37AAAGS1366J1Z1

LEGAL NAME : SATISH DHAWAN SPACE CENTRE SHAR

VALIDITY FROM:29/08/2017

TYPE OF REGISTRATION:REGULAR

6.**Customs Duty** - SDSC-SHAR is eligible for 100% Customs Duty exemption as per Notification No. 050/2017 539 (b) Dt: 30.06.2017. This may be taken into account while quoting for import items, if any.

In case tenderers offering items considering customs duty exemption, they should also indicate the bill of materials and price, separately, with Customs Duty component and terms and conditions thereto.

8.**Advance Payment** - Wherever advance payment is requested, Bank Guarantee from any Nationalized Bank/Scheduled Bank should be furnished. In case of advance payments, if the party is not supplying the material within the delivery schedule, interest will be levied as per the Prime Lending Rate of RBI plus 2% penal interest.

Interest will be loaded for advance payments/stage payments as per the prime lending rate of RBI and will be added to the landed cost for comparison purpose. In case of different milestone payments submitted by the parties, a standard and transparent methodology like NPV will be adopted for evaluating the offers.

9.**Liquidated Damages** - In all cases, delivery schedule indicated in the Purchase Order/Contract is the essence of the contract and if the party fails to deliver the material within the delivery schedule, Liquidated Damages will be levied @ 0.5% per week or part thereof subject to a maximum of 10% of total order value.

10.**Performance Bank Guarantee** - Performance Bank Guarantee for 10% of the order value should be furnished in the form of Bank Guarantee from nationalized/scheduled bank or by Demand Draft valid till warranty period plus sixty days as claim period.

11. Security Deposit – Security Deposit for 10% of the order value is mandatory, if the ordered value is Rs.5.00 lakhs and above. Party shall furnish the Security Deposit in the form of Bank Guarantee from nationalized/scheduled bank or by Demand Draft valid till completion of the contract period plus sixty days towards claim period for faithful execution of the contract.

12. BANK GUARANTEE FOR FIM: Supplier has to submit Bank guarantee for equal value of Free Issue of Materials (FIM) issued by the Department from Nationalised / Scheduled Bank valid till receipt and acceptance of supply and satisfactory accounting of FIM plus sixty days as claim period.

13.The delivery period mentioned in the tender enquiry, IF ANY, is with the stipulation that no credit will be given for earlier deliveries and offers with delivery beyond the period will be treated as unresponsive.

14.The Department will have the option to consider more than one source of supply and final orders will be given accordingly.

15.The bidders should note that conditional discounts would not have edge in the evaluation process of tenders.

16.Non-acceptance of any conditions wherever called for related to Guarantee/ Warranty, Performance Bank Guarantee, Security Deposit, Liquidated damages are liable for disqualification.

17.Wherever installation/ commissioning involved, the guarantee/warrantee period shall reckon only from the date of installation and commissioning.

18.Purchase/Price Preference will be extended to the MSMEs under the Public Procurement Policy for MSMEs formulated under the Micro, Small and Medium Enterprises Development Act, 2006 and instructions issued by Government of India from time to time. Vendors who would like to avail the benefit of MSME should clearly mention the same and submit all the documentary evidences to substantiate their claim along with tender itself.

19.The drawings, specifications, end use etc., given by the Centre/Unit along with the tender enquiry are confidential and shall not be disclosed to any third party.

20. SPECIAL CONDITIONS FOR SUBMITTING QUOTATIONS IN FOREIGN CURRENCY BY THE INDIAN AGENTS

The Tenderer should submit the following documents/information while quoting:-

a)Foreign Principal's proforma invoice/quote indicating the commission payable to the Indian Agent and nature of after sales service to be rendered by the Indian Agent.

b)Copy of Agency agreement with the Foreign Principal and the Indian Agent, precise relationship between them and their mutual interest in the business.

c)Registration and item empanelment of the Indian Agent.

d)Agency Commission will be paid only Indian Currency.

e)Compliance of the tax laws by the Indian Agent.

21. High Sea Sales- Against High Sea Sale transactions:

a.Offers shall be on all inclusive basis including delivery upto Sriharikota at the risk and cost of the supplier. Customs Clearance is the responsibility of the supplier and at his cost and risk.

b.100% payment will be made within 30 days after receipt and acceptance of the items at our site.

c. GST as applicable

d.Customs Duty Exemption Certificate and other relevant documents required for Customs clearance will be provided.

e.High Sea Sales Agreement furnished by the supplier in accordance with the terms and conditions of our purchase order will be signed and issued by SDSC-SHAR.

22.The following information/ documents are to be submitted wherever applicable.

1.Product Literature

2.Core banking account number of SBI, RTGS Details

3.PAN No. in quotation and invoices

4.GST Registration details.

5.In case of MSME, registration details / documents from Competent Authority.

23. EXCLUSION OF TENDERS

The following tenders shall be summarily rejected from the procurement process

a.Tenders received from vendors who have not qualified in terms of their registration.

b.Tenders received against publishing of a limited tender in the CPP portal.

c.Tenders of vendors who have been removed from the vendor list or banned/debarred from having business dealings.

d.Unsolicited tenders from vendors.

e.The tenders which materially depart from the requirements specified in the tender document or which contain false information.

f.The tenders which are not accompanied by the prescribed Earnest Money Deposit.

g.The tenders of vendors who have not agreed to furnish Security Deposit, Performance Bank Guarantee and Liquidated Damages.

h.The validity of the tenders is shorter than the period specified in the tender enquiry.

i.The tenders received from vendors or their agents or anyone acting on their behalf, who have promised or given to any official of the Centre/Unit/Department, a gratification in any form, or anything of value, so as to unduly influence the procurement process.

j.The tenders received from vendors, who, in the opinion of the Centre/Unit, have a conflict of interest materially affecting fair competition.

k.The tenders received from Indian agents on behalf of their foreign Principals/OEMs (in cases where the Principals/OEMs also submit their tenders simultaneously for the same item/product in the same tender).

l.In case two or more tenders are received from an Indian agent on behalf of more than one foreign Principal/OEM, in the same tender for the same item/product.

m.If a firm quotes 'NIL' charges / consideration, the bid shall be treated as un-responsive and will not be considered.